

# BULLETIN NO. 37

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GOVERNMENT OF THE PROVINCE OF SASKATCHEWAN

Department of Agriculture  
Live Stock Branch

## SHEEP IN SASKATCHEWAN

BY

J. COCHRANE SMITH, B.S.A.  
Live Stock Commissioner for Saskatchewan

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THE HON. W. R. MOTHERWELL, MINISTER OF AGRICULTURE*

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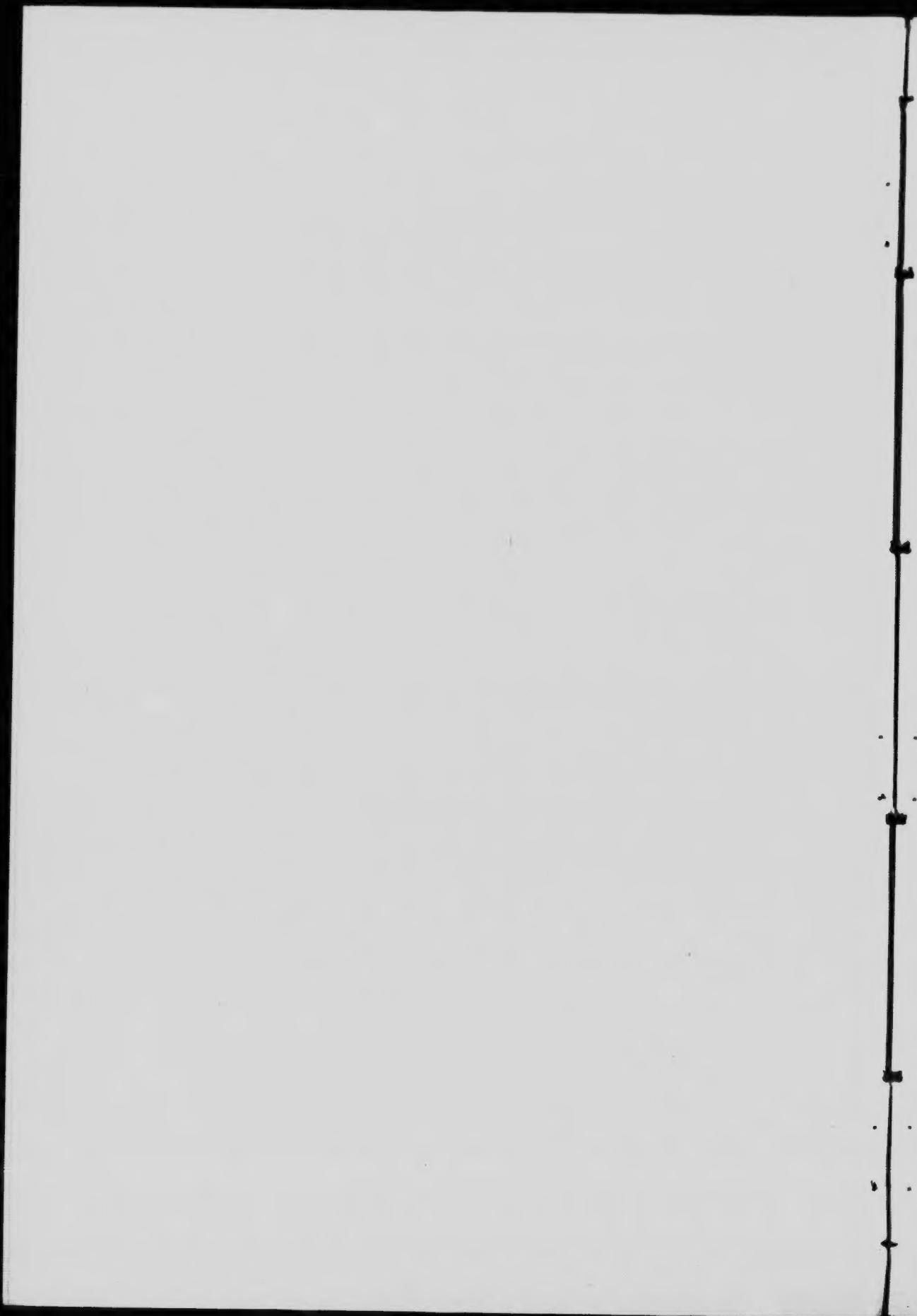
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SOUTHDOWN.



HAMPSHIRE.



COTSWOLD.



KENT OR ROMNEY MARSH.



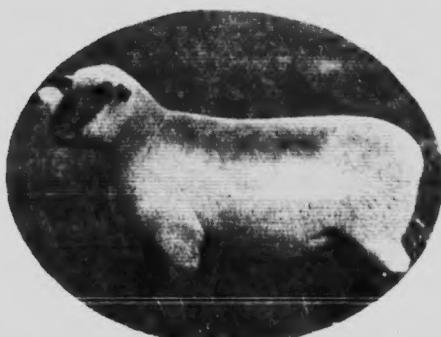
LEICESTER.



LINCOLN.

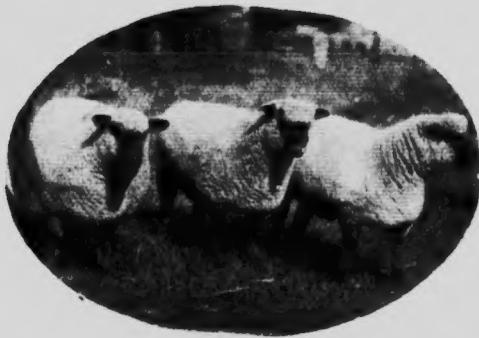


DORSET HORN.



DORSET DOWN.





OXFORD EWES.



SHROPSHIRE EWES.

## SHEEP IN SASKATCHEWAN.

"Better the heart and better the head,  
Better the man when properly fed;  
So we plunged our hand to the mid-wrist deep,  
In a cinnamon stew of the Broadtailed sheep;  
And he who hath never ate of the food,  
By Allah ! He knoweth not bad from good."—*Kipling*.

In 1910 statistics showed that there were 164,855 sheep in the Province of Saskatchewan; in 1912 there were only 128,198 or a decrease of 52,657 in two years' time. It can readily be understood that the breaking up of the range lands and the dispersal of the ranch flocks were largely responsible for this decrease, but there is no sufficient reason why these sheep should not have been purchased by Saskatchewan farmers and thus have remained in the province. It has been uncontestedly proven that this province is well suited for sheep raising, in fact, far better suited than a number of areas on the North American continent which clear several million dollars annually out of sheep. In Saskatchewan we are practically free from intestinal parasites, from foot rot and from the majority of contagious and infectious diseases which in many countries are so destructive to the ovine race. We have a favourable soil and climate, abundance of a class of feed upon which sheep thrive profitably and which is utilised by no other class of farm animal as well as a multitude of other favourable conditions, all of which point to profit in sheep. The same conditions prevail over the major portion of the Dominion, and yet to quote from a current journal:

"The sheep raising industry in Canada dates back to almost the start of agriculture and had become fairly well established when it received a serious set back, and for this last few decades it has been gradually falling off. Perhaps no country in the world is better adapted to this line of occupation. The soil, the climate and the agricultural population are most favourable for the production of the finest quality of mutton and wool. With these facts before us, the question arises as to what are the causes of the stagnancy which has befallen the industry. Since 1881, when the total sheep population of the Dominion was 3,048,678, the number has gradually fallen off until, in 1901, the sheep population is given as 2,510,239, and in 1911 as 2,389,300. This condition of affairs

has not arisen because the farmer can obtain a better profit from other sources, but other reasons are obtainable. In all parts of the country flocks are to be found that are a great source of profit to the owner, and wherever this occupation is followed along systematic and modern lines it has been a success."

The same article goes on to say, "All that is wanted is a systematic campaign of education by which every agriculturist will learn of the advantages of sheep keeping conducted along modern businesslike lines."

Whilst those most closely connected with sheep raising might not be willing to admit that an educational campaign is *all* that is needed to turn the capital and energy of farmers towards sheep keeping, yet it is undoubtedly true that were more of our western farmers conversant with sheep and sheep raising there would be a far larger number kept. It is the purpose of this bulletin, in some slight degree at least, to acquaint the man on the land who has not had previous experience with this class of stock and who wishes to start into and make a success of mixed farming with sheep as one class of live stock, with the ways and means of selecting, stabling and caring for a flock of sheep all the year round, including such important seasons as those of breeding and lambing. It can readily be understood that a bulletin of this nature is necessarily as condensed as possible and that there are a great many things of more than probable interest and possible use in connection with the raising and keeping of sheep that must be left unsaid. However, if those who take time and patience to peruse the following pages obtain a rough outline of the methods employed in keeping sheep in Saskatchewan in order to insure a reasonable measure of profit and success, its object will have been attained. The standpoint from which the question is approached is that of the small farmer and as in the Dominion today there is a good demand for both mutton and wool, the remarks as to selection, etc., are based upon the "dual purpose" sheep, if it may be so called, without reference to the specialised work of wool production as related to the Merino families.

*Reasons why Sheep should be kept.*—The first question that the man who proposes going into mixed farming will ask himself is, What class of stock shall I keep? And if some one suggests sheep, the next query will be, Why?

In general, sheep should be kept for the following reasons:

1. A farmer can start with the nucleus of a good flock of sheep on a very limited amount of capital. Two hundred dollars will put him in possession of a flock that is large enough, and valuable enough, for any beginner to commence with, and which will develop and increase in proportion as do the owner's knowledge of and interest in them.
2. Sheep do not require elaborate buildings, a very plain, easily erected cheap shed will do for them, especially if well lighted and ventilated and properly situated and planned.
3. Sheep will produce two crops in a year, crops that are always in demand, wool and lambs, and the money obtained for the first product is most acceptable to the average farmer in midsummer, whilst if early lambs are raised they can be disposed of in time to obtain cash to pay the store bills through harvest and threshing.

4. Sheep do not require much labour, but they *do* require attention. If properly and carefully attended to, and *inspected daily*, the actual labour in connection with them will be proportionately less than with any other animal on the farm.

5. Sheep assist the farmer to keep his farm clean by destroying weeds. There are three hundred different weeds and grasses known to Canada and of these sheep will eat two hundred and sixty. Horses and cattle eat only about seventy-five, so that sheep are entitled to attention on this score alone.

6. Sheep will thrive on a class of feed that cannot be properly, or profitably disposed of in any other way. They will clean up the fence corners, they can be penned on the patches of wild or unbreakable land and kept inside proper fences with little *or* no difficulty.

7. They are invaluable upon the summerfallows, not only to keep down weeds, but also on account of the fact that they pack and fertilise the land, so much so, that they have been characterised as having the "golden hoof."

In short, the reasons for keeping sheep are small outlay, quick returns, cheap upkeep, little labour, inexpensive buildings, low cost of feed, assistance in weed destruction, and the fact that there is a constant demand for their products. The farmer should take all these into consideration and include sheep in his plans when going into mixed farming.

#### HISTORY OF BREEDS SUITABLE FOR SASKATCHEWAN.

The history of the various breeds of sheep forms interesting reading. For the benefit of those unacquainted with this, a brief review of the leading western breeds as recently published in one of our foremost live stock journals, is given herewith.

"We find as we study the history of many of these breeds that some outstanding valuable character in a breed has been sought and bred for years until it becomes permanently established. Some breeds had horns in the wild state, and these were bred off. Some had the colour of the face changed to suit the fancies of the breeder, and all manner of changes in the quality and quantity of the fleece have resulted from breeding and selecting with a definite purpose. As a general rule, the long wool came from breeding the original mountain sheep with those living on luxuriant pastures, and short wools were the result of crossing sheep from colder districts on those that received less pasture and more grain and inside feeding; thus a thicker and more compact fleece resulted.

Following are a few remarks on the history and characteristics of the breeds of sheep most suited to Saskatchewan.

#### SHROPSHIRE.

The Shropshire is perhaps the best known breed in the Canadian west. Their uniform covering of flesh, hardiness of constitution, earliness of maturity, adaptability to many soils and climates, strength of character when crossed on grade sheep and the quality of their mutton make them a particularly "all round" good type of sheep.



SHROPSHIRE RAM



OXFORD RAM.

The breed originated in the counties of Shropshire and Staffordshire, England, by crossing Southdowns on the native sheep. These sheep were horned, black or spotted in the face, fairly large and carrying a fleece of excellent quality. The irregularity in type which existed in the early days has largely disappeared. The ewes are prolific and with ordinary management considerably over 100 per cent. increase may be obtained. Their strongest feature is their ability to produce a mutton type of sheep when crossed on grade ewes. The breed is responsible for having supplanted or reduced in numbers many of the original breeds of the country, possessing as it does almost ideal quality, good size and a large proportion of lean meat along with the fat.

#### OXFORD.

The Oxford is one of the largest of the Down breeds. They originated about 1830 by crossing Cotswold rams on improved Hampshire ewes, with the object of securing superior quality, of the mutton as compared with long woolled sheep, and therefore higher price per pound; and the superior weight of wool and of mutton as compared with short woolled sheep. The illustration will show that they have the face free from wool and that they are rather a larger sheep with more scale than the Shropshire. In Canada they seem to have the ability to do well on low ground, and even the supporters of the breed are unable to account for this distinguishing feature. They are scarcely as hardy and active as some of the other Down Breeds.

#### SUFFOLK.

This breed was begun by crossing ewes of the hardy Blackface Norfolk horned mountain breed with Southdown rams. They were called Southdown Norfolks until 1859 when they were provided with a special name and became recognised as a breed. The breed has some outstanding qualities which distinguish it from the other short woolled breeds. The face, head and legs are quite free from wool. Their constitution is unusually robust and hardy, the animals having great power of endurance when driven long distances. In activity of movement, in good carriage, in fecundity, early maturity, and hardiness they are well to the fore. Their special immunity to foot rot has raised their reputation considerably as a lowland sheep.

#### SOUTHDOWN.

The Southdown or Sussex is a breed through which all the other Down breeds have been formed, by crossing it with the old-fashioned types of the different districts. They are short-legged and in all respects most compact and symmetrical being particularly good in the hind quarters. The present improved and peculiarly handsome form of the breed has been attained by selection from the original stock, which was light in the fore quarters and leggy. No outside blood was introduced. Their native country was Sussex in a range of low, chalky hills, five or six miles in breadth, stretching along the coast upwards of sixty miles and passing into the chalky lands of Hants on the west. This environment accounts mainly for their small size, together with the quality of their flesh and wool. When brought farther inland on rich pastures, it was found that the quality of the mutton deteriorated. The quality and appearance



SUFFOLK RAM.



SOUTHDOWN RAM.

of the wool was less desirable and the hardiness of the sheep was interfered with. The present day type, although small, is set on very short legs, and on account of its heavy muscling and ease of fattening, its qualities as a purely mutton sheep are difficult to surpass.

#### HAMPSHIRE.

The origin of the Hampshire sheep may be attributed to the crossing of the old Wiltshire horned sheep with the Southdowns, early in the nineteenth century. Many different types resulted, but some promoters of the breed got together and guided the improvement of type by introducing Southdown blood only.

This short woollen breed may be distinguished by their heads, the wool being down over the face to the eyes; their long, heavy ears and prominent Roman nose. They are particularly adapted for the high lying and more or less barren uplands, upon which class of land they were first accustomed when introduced into Hampshire. When it comes to feeding for gains, the Hampshire is able to stand heavier feeding than almost any other breed of sheep known. The rams mature rapidly and the ewes come in season early, and, being prolific, it is possible to get large returns of early lambs.

#### DORSET DOWNS.

This is a breed of sheep whose name may be readily confused with the Dorset Horn, which latter breed is not unknown in Western Canada. In appearance, however, they are distinctly different. The Dorset Down is not unlike the other Down breeds. It has the mutton conformation, dark face and legs, is hornless, and has wool over the head, down to the eyes. The breed is also called the Improved Hampshire, as it originated by breeding Southdown rams to Hampshire ewes, and using the rams from the flocks thus formed to improve the original Hampshire stock. This cross, naturally, modified the coarseness and rangy type of the Hampshire, as well as giving them an especially strong heart girth, and shorter legs. The mutton of the Dorset Down is much sought after by many of the world's best markets.

#### THE DORSET HORN.

The Dorset Horn is a sheep with white face and legs, a pink or flesh coloured nose, and long curly horns, giving it a distinctly attractive appearance. This breed is one of the oldest of the upland, short-woollen, horned races, a breed prevailing in Dorset, Somerset and Devon. Some good authorities claim that the Dorset Horn is the native sheep of Wales, and some good proof can be given that they were left there when the Welsh had to escape from their foes across the Bristol Channel to South Wales.

From the standpoint of prolificacy the Dorset Horn is unsurpassed. The ewes will produce two crops of lambs a year, are splendid milkers and good mothers. The mutton has a particular flavour that is very much desired on the London, England, market. The wool of the Dorset Horn is prized on account of its whiteness and fine quality, and it commands a correspondingly high price.



HAMPSHIRE RAM.



CHEVIOT GIMMER.

## CHEVIOT.

The Cheviot is named from the range of rounded or cone shaped green hills, growing a superior quality of pasture, on the Scotch and English border. They are really a mountain sheep, and are so hardy that it is surprising that there are not more of them found in the Canadian North-west. The breed produces mutton of the finest quality, but has the one objection, that it also produces a large number of yellow carcasses which do not bring top prices. The Cheviot has a graceful appearance and carriage peculiar to itself. The pure white legs and face, squarely shaped body, stylish carriage and alertness make this breed a particularly attractive one. Improvements were made in the breed by the work of Bakewell in discouraging the inbreeding of mountain sheep, and the use of other blood, some of which is supposed to be Leicester. Cheviots cross well with other breeds with good results, and are invaluable for range purposes.

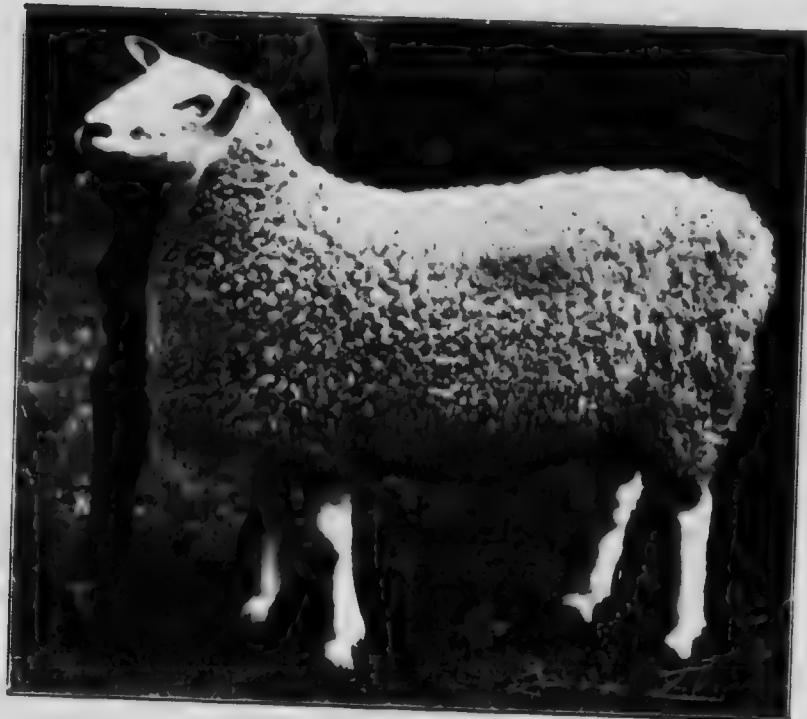
## LEICESTER.

We now come to those breeds of sheep that are distinctly long wools. When the word Leicester is mentioned the names English, Dishley and Border Leicester are immediately thought of as applying to this breed of sheep. The English Leicester is the leading type of the three, and Dishley is the name given to the improved type which Bakewell introduced by his yet unknown method of breeding and feeding. Such remarkable results were achieved that for the first time in sheep history, the value of carefully selecting males and females for breeding purposes was seriously considered. These Dishley Leicesters were large, with a heavy, fine-fibred fleece, and the forehead was well covered with wool. They were fed abundantly and were of a mild disposition, both of which qualities favoured the rapid addition of flesh. Any introduction of this blood into the mountain breeds was detrimental as it produced a less suitable animal for the highland pastures.

The Border Leicester is the one shown in the accompanying illustration. It has the bare face, head and legs and somewhat the same stylish carriage and Roman nose as the Cheviot. This Border Leicester, which is now a pure breed in itself, originated from a cross of the Dishley Leicester and the Cheviot. It is not so much as a mutton or wool producer that the Border Leicester excels, as in its usefulness for cross breeding. When used on other breeds of slowly maturing quality, they produce in every case a good mutton type and an early maturing animal.

## COTSWOLD.

The Cotswold can claim the distinction of being the oldest pure breed in Britain. They derive their name from the Cotswold hills in Gloucestershire, where in the early Roman days, a large trade was carried on in the manufacture and sale of woollen cloth. From this it may be inferred that considerable care was devoted by our ancestors to the breeding of sheep, even at this remote time, and as the trade in both mutton and wool has been maintained throughout both Saxon and Norman times, it is little wonder that the breed is so much appreciated for their large size and for the power they possess of stamping their distinctive characteristics when crossed with other breeds. The Cotswold may be distinguished



LEICESTER.



SHROPSHIRE.

by its long tuft of wool which hangs in curls from the forehead to the nostrils. The fleece is long and the ends of the staple curly. It is neither close nor too open, and rather coarse in quality. They are very hardy and well suited to stiff clay soils even though they are wet, a place where many sheep do not thrive well.

#### LINCOLN.

The Lincoln stands at the top with the South Devon as one of the two largest breeds of sheep in England. It originated from crossing the old Lincoln, famed for its wool, with the English Leicester. The old Lincoln is described as follows: Large in size and of coarse form, with wool long, thick and tough in the filaments, of inferior felting qualities, but tolerably soft to the touch, and rarely approaching to the harsh and wiry character of hair. They fatten slowly and consume much food, but are valued by the butchers for their tendency to produce internal fat.

The Leicester cross rather reduced the size, while the aptitude to fatten and tendency to early maturity increased. The wool is shorter and finer, but it lacks the toughness, softness, and length of fibre of the old Lincoln, the wool of which was altogether peculiar and such as no country in Europe produced. Many of the disadvantages of crossing have been overcome by selection, as there is no long wool breed that can produce the same quantity or quality of long, strong, lustrous wool as the Lincoln. It is its power of wool production and great size which have brought it into high repute in sheep rearing countries, although it is admitted that the mutton is not of the highest order.

#### KENT.

This breed is also known as the Romney Marsh, a hardy white faced breed. This breed has been developed entirely by selection, taking the symmetrical Leicester as the type desired. By such selection, exceptional hardiness and adaptability to different conditions were obtained. The wool is good and the fleece very close and compact. They are not particularly prolific as seldom is more than one lamb produced from each ewe. The foretop may be present or wanting; the body conformation is not regular, and the handling qualities are frequently irregular. They are largely used in Australasia for crossing purposes, where they have proven of great value. An association for this breed was formed in 1906 and the regulations for registration in the flock book are exceedingly stringent."

#### GENERAL INFORMATION.

*Handling of Sheep.*—One of the first requisites of a good shepherd is to know how to handle sheep and it is easy to tell the inexperienced man by the way in which he catches and holds these animals. *Sheep must never be caught or held by the wool.* The wool of a sheep occupies the same relative position to that animal as the hair of a person does to a human being, and the sensations experienced by the luckless sheep when caught by the wool attached to some tender portion of the body are better imagined than described. Sheep that are killed after being maltreated in this way show discoloured patches of bruised flesh and ruptured

blood cells wherever the wool has been grasped and anyone who sees the carcass of a sheep which has suffered from rude handling will learn a valuable object lesson. There are two places to catch a sheep, the one is under the chin, or by the lower jaw, but not by the wool at that point; the other is by the hock or gambrel joint. To hold a sheep it is simply necessary to place the hand under the lower jaw to prevent it from going forward.

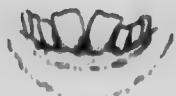
The correct way to hold a sheep is to stand or kneel on the left side with the left hand under the jaw, and the right hand free. If the animal attempts to move back, the right arm should be placed across the back of the thighs. Pulling the head or wool will only induce resistance. If a shepherd's crook is used it should always be inserted above the gambrel joint if possible, as it is not then liable to injure the limb. To catch a single sheep out of a flock it is simply necessary to crowd the animals in some corner of the pen, and then when the efforts of the selected sheep are hampered by the crowding of the others, to catch it by the hind leg at the joint with the right hand and then swing the left hand round under the jaw. To hold a sheep still for any time it should be turned up in a sitting posture with the back against the knees and the head held easily over the left knee by means of a left hand grip on the lower jaw. Sheep will struggle fiercely if their legs are tied or held, but seem to accept the inevitable when their legs are free and off the ground. Fat or old sheep may take injury if kept turned up too long, especially if the posture in which they are kept is inclined to bring the weight of the intestines on the back.

*How to tell the Age of Sheep.* The age of sheep, as that of horses and cattle, is most easily learned by inspection of the teeth. Sheep have no incisor or front teeth in the upper jaw, the prehensile part of which consists of a hard cartilaginous pad. It should be remembered that the condition of the teeth depends to some extent upon the condition of the animal and the kind of feed it has been receiving. Sheep in their lifetime have two sets of teeth, temporary and permanent. For our purpose it will only be necessary to deal with the latter. These are larger, stronger and usually yellower coloured than the temporary teeth. The front or incisor teeth are those by which the age is determined. In general, the appearance of the first large pair of incisors (Fig. 1) indicate that the animal is from fourteen to sixteen months of age. The first pair of incisors are situated side by side in the front centre of the lower jaw.

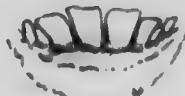
The appearance of the second pair of incisors (Fig. 2), indicates that the animal is from twenty-four to twenty-eight months old. The second incisors are situated one on each side of the first incisor pair.

The appearance of the third pair of incisors (Fig. 3) shows that the animal is from thirty-four to thirty-eight months of age. These are situated one on each side of the first four incisors already mentioned.

The appearance of the fourth and last incisors shows that the animal is, roughly speaking, four years old. The sheep is then said to have a full mouth, as it has only eight incisor teeth in all, and after these have appeared the age of the animal can only be arrived at in a general way. As the animal becomes older, the teeth become narrower, generally discoloured, and the space between them increases. Ewes which have lost any of the incisor teeth should not be purchased for breeding purposes at all.



1 year old



2 year old



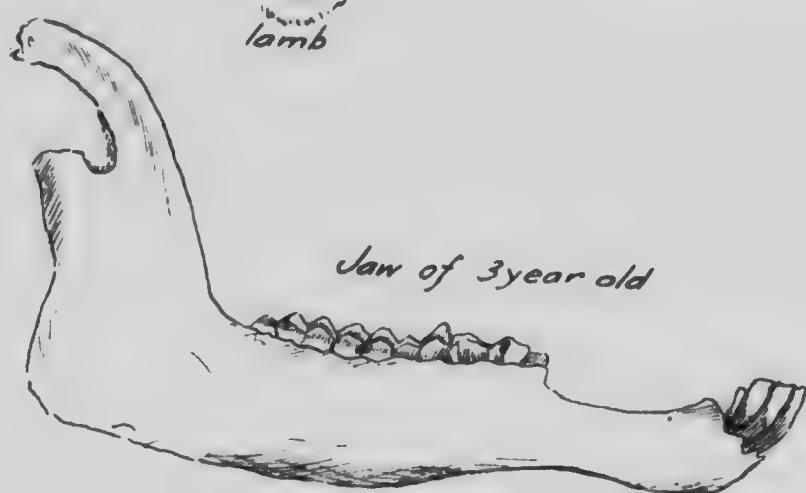
3 year old



4 year old  
(full mouth)



lamb



Jaw of 3 year old

## ESTABLISHING A FARM FLOCK.

*Requirements.*—The requirements for sheep on the farm will be dealt with later, but it might not be out of place to say here that ere bringing sheep to any farm, five requisites should be provided:

1. A high dry spot for a sleeping place, surrounded by a tight fence to make a corral, to protect the animals from dogs or coyotes.
2. A shed on such a location, to protect the animals from adverse weather conditions. This shed should, where possible, give twelve to fifteen square feet of room per head for breeding ewes, and ten to twelve square feet for fattening stock.
3. An ample supply of pure water to which the sheep should have access for half an hour at least once daily. In the case of hot weather they should be watered twice, and if the flock is large they should be permitted to remain around the trough or creek for a longer period of time.
4. At least one field with sheep proof fence where the animals can be turned when too busy to keep an eye on them.
5. A dipping vat, in which all sheep should be dipped immediately upon their arrival at the farm, as there are numerous parasites and disease germs with which they may have been infested or have picked up in the cars or stockyards, which will be destroyed by this process.

*What Class to Buy, Where and When.*—For the average Saskatchewan farmer the purchasing of a pure bred flock involves too great an expenditure so that it will only be necessary to deal briefly with this question. For the man who can afford pure breeds the best advice that can be given to him is to select one of the Down breeds in which are included the Oxford, Hampshire, Shropshire, Suffolk, Southdown and Dorset Down. Of the long wool breeds the Lincoln, Leicester and Cotswold have all admirers, but are scarcely as hardy under our provincial conditions as are the representatives of the Down breeds. They are, however, larger sheep, possessing great width of back and loin, and are invaluable for crossing purposes on our native stock, especially from a mutton point of view. Representatives of the Shropshire, Oxford, Suffolk, Southdown and Leicester breeds may be obtained provincially or in the west, whilst those of the other breeds are to be found in Ontario and Quebec. Apart from the wisdom of patronising home industries, where possible, western bred sheep should be obtained, because they thrive better than imported animals, which, especially in the hands of a beginner, are more liable to suffer from disease or unfavourable surrounding conditions, until they become thoroughly acclimated. Average males of these breeds will cost from \$20 to \$40 according to age and quality and females from \$20 to \$30. With regard to grades, where it is possible to obtain them these should be bought from some farm raised flock, but as this supply is extremely limited the majority of our farmers will have to select their foundation stock from the range. From Swift Current to Maple Creek, along the main line of the C.P.R., there are numerous sheep ranches from which such animals may be obtained. These range ewes, though smaller than their farm raised kindred, are extremely hardy, are more gregarious and when crossed with good pure bred sires have given amazing results. It is not advisable for a farmer who is not acquainted with sheep to purchase these himself, nor should he buy them by the bunch.

These ewes should be individually selected and should be of uniform type and age. In passing it might be mentioned that since 1910 the Saskatchewan Sheep Breeders' Association have been supplying these ewes to many farmers throughout the province and where they have had good care and attention they have in every case proven satisfactory.

*When to Buy.*—Probably the best time to purchase is toward the latter end of the month of June, as the majority of animals, both on the farm and the range are shorn by that time, and this is a desirable condition for several reasons:

First, because it is far easier to detect defects of conformation when the fleece is off.

Second, because sheep are more free from vermin after shearing and also are usually dipped after that process.

Third, a far greater number can be shipped as a carload and will travel in greater comfort and with less risk of loss from heat.

If the animals are not dipped the purchaser should insist on this being done, as it is most probable that the vendor has the conveniences at hand and sheep will thrive far better after dipping. In purchasing ewes which have lambed, when the lambs are not also being taken, it is advisable to purchase immediately after weaning, as it is more easy at that time to pick out the ewes which have raised lambs and whose udders are in good condition. If the ewes and lambs can be seen before weaning, the value of the dams may be more easily determined by the quality of their offspring. For both sexes the best age to buy is yearlings, or what in sheep parlance are known as shearlings or once shorn sheep. This is especially true in females, as the inexperienced purchaser is not nearly so apt to have barren or spoiled ewes put upon him, and he will have a correspondingly greater period of usefulness from the flock, although possibly a little more trouble at lambing time. It can readily be understood that in selecting a large bunch, especially of range sheep, the purchaser will not be able to follow the above advice, but the small farmer with limited capital, about to start in sheep, should exercise every precaution to make the venture a success.

#### SELECTION.

*How to Select.*—Every man who intends to keep sheep should have some idea at least as to what are the points of an animal which render it either of good or bad conformation, desirable or undesirable. Without going into the judging of sheep to any great extent, the following remarks might prove useful: The three great cardinal factors in selection are, width, depth and symmetrical uniformity. These can be split up into the various component points that go to make a good sheep, but they are the outstanding features, more especially from a mutton point of view.

*Systematic Examination.*—In examining sheep with a view to determining their conformation, a regular system should be followed so that no important factor may be missed. The easiest way is first to note the animal from the side, standing a few yards away, in order to determine the general appearance including strength and evenness of top and underlines, depth of body and general carriage. Then, commencing at the head to work along the body taking the neck, shoulder top, shoulder face, brisket, chest, fore legs, back, ribs, loin, rump, leg of mutton, hind legs

and feet in order. After this the condition of the animal and the quality and quantity of fleece should be examined. In making this examination the hands, kept flat and with the fingers close together, should be used. On no account should the points of the fingers be dug into the fleece.

*Conditions Applying to Both Sexes.*—The following conditions apply to the selection of both sexes:

The animals should be from one to two years of age, should be of uniform type and of good average size for the breed or class they represent; should be in fair condition, free from any suspicion of contagious or infectious disease, and as free as possible from vermin of any kind, such as ticks, lice, etc. Condition in both sexes may be determined by the colour of the skin, which should be a rich salmon pink; by the eye, which should be prominent, full and bright; and by the fleece, which should be oily and elastic, not dry and brittle.

*Selection of Sire.*—Let us take the selection of the male into consideration first, and right here it should be said that notwithstanding the fact that the ewes may be grades, the sire *must* be pure bred. *Almost* in this case is of no use and it matters not how good an individual the grade ram may be or how near he came to eligibility for registration, start right and use a pure bred sire which has the inherited prepotency of unnumbered ancestors to stamp his progeny with the fleece, form and breeding qualities which are so much sought after, and which mean dollars and cents to the fortunate owner.

Aside from breed type, the ram must conform to the cardinal points before mentioned, and must be deep, wide, lowset and uniform—uniform in fleece, form and fleshing, with no sharp angles or unsightly hills and hollows in the body conformation, no disproportionately large or small head, no crooked legs, no narrowness here and breadth there, but symmetrically uniform throughout. Nature is an artist—the artist, but also a mechanic, and the mechanic; symmetry spells strength and uniformity, utility in all kinds and classes of animals, though care should be taken that symmetry in the sheep is not the result of the shepherd's shears, or that width and depth of body are not produced by fat and fleece.

The ram should conform to the type of the breed he represents and should be both masculine and vigorous. In order to determine what masculinity is it will only be necessary to study the difference between the head and carriage of the male and female champions in the show yard or, failing that, any virile healthy representative of the opposite sex and the same breed.

In the male we require strength, ruggedness and breed character. The face should be broad between the eyes, rather short and with a Roman, or slightly Roman nose; the eyes full and bright; the crest or neck should be thick, curving and full, showing strength of muscling throughout. The chest should be wide and well let down between the fore legs, which latter should be short, straight and strong, set well apart and well placed under the body, looking as if they had been intended to grow there for the purpose of supporting the body, and not stuck on in a hurry or as an afterthought. The pasterns should be straight and upright, not horizontal or broken down, as is sometimes seen in overfed, old, disabled or misshapen animals. The fore ribs behind the shoulder should be deep and round, giving large heart girth and ample room for heart and lung power. The brisket should be prominent and wide. An

animal with a front as above described has what is known as strong constitution, pre-eminently necessary in the sire. The back ribs should also be widely sprung and long, the loin should be short, thick and strongly muscled; the rump broad, level and well carried out, not tapering nor sharply sloping. The thighs should be heavily muscled inside and out, and the hind legs short, set well apart, straight in hock and upright in pastern. The feet should be of medium size and smooth, free from any signs of roughness or rings. The bone of the legs should be clean and flat and the animal should walk freely and gaily, with an active, quick step. The fleece should be silky and springy to the touch, with an elastic feel, and the entire body of the animal should be evenly and thickly covered with fleece and flesh. The flesh should be firm and rubbery, not soft and flabby, and should not gather in rolls on any part of the body. In breeds that are woolled about the head, the more complete and dense the covering is, the more it is sought after.

To summarise: we must have in the sire, constitution, breed type, masculinity and uniformity throughout in width, depth, flesh and fleece.

*Overfat Sheep.*—A word might be said here with regard to overfat sheep. Surplus fat in sheep, as in other animals, is not desirable and interferes with their value, especially for breeding purposes. In the case of overfed or aged animals which have been kept in high condition for a considerable period of time, we may find the back bare and raw, whilst the fore flanks and ribs are padded with masses of fat. An animal in this condition is said to have "slipped" and should not be purchased for either flock or block. It should be remembered that the older an animal is, the more liable it is to suffer from this condition, and also that in aged animals there is a greater tendency to break down in pastern and lack full fleece. Extreme size is usually attained at the expense of smoothness and uniformity, for this reason, average to large sized animals are generally best.

The beginner should always purchase a mature sire who has proven himself a stockgetter, as younger animals are not always consistent breeders.

#### SELECTION OF THE EWE.

In selecting the ewe we look for a rather longer face, with an entire absence of coarseness or meanness about the head, the forehead broad, the eyes prominent and bright, and the face from the eyes to the nostril, clean and fine. The neck should be inclined to length and slenderness, without any of the muscular thickness noticeable in the male. The body should be deep with well-sprung, round, deep ribs, and should be long in order to give capacity for the unborn lamb. Short ribbed or tucked up ewes should be avoided. The ewe should be wide across the loin and hips and at the pin bones, with legs set well apart. It should not be overfat, and should stand on short, straight, clean limbs, well set under the body.

In selecting ewes that have already bred, the buyer should, if possible, turn the animal upon its back and examine the udder, which in the dry ewe should be soft and spongy, with two well developed rubberlike teats, set well apart, and showing in no part of udder or teat any tendency towards hardness, hard lumps, or malformation of any sort.

To summarise: the female should show constitution and breed type, should be feminine; should be long, deep, wide and roomy, with a uniform covering of fleece and flesh; should have short, upright pasterns and straight, clean limbs.

#### SHIPPING POINTERS.

Once the sheep have been purchased the question of shipping arises. As a general rule it is extremely hard to get the regular double-decked cars at points in Saskatchewan. The reason for this is that, though there would possibly be sufficient traffic to Winnipeg and eastern points, there is little or no freight which can be handled west in them. The common or easiest plan is for the purchaser either to deck the cars himself or hire a carpenter to do so. The lumber and labour will cost from thirteen to sixteen dollars per car, according to the season and locality. Ordinary rough lumber and 2 x 6 scantling for cleats and supports will answer the purpose well. It should be borne in mind that few, if any, points have double deck unloading chutes, and on this account it is usually advisable to make adequate preparation ere starting to unload. Both the bottom and the top deck should be barred across so that one can be loaded or unloaded at a time without any danger of the sheep in the other coming out. In loading, care should be taken not to crowd the animals, especially in hot weather. With mature range sheep, about 105 head to the deck, or 210 to the car, is a pretty fair average, with pure breeds, about 70 to the deck or 140 to the car, is generally sufficient. These figures are for June to October shipping. The average cost for grades from the range districts is about 30 cents per hundred. Exact freight rates are as follow:

Maple Creek to Regina	.....	21½c per 100 pounds.
Maple Creek to Saskatoon	.....	29½c per 100 pounds.
Maple Creek to Wolseley	.....	24 c per 100 pounds.
Maple Creek to Yorkton	.....	32½c per 100 pounds.
Maple Creek to Prince Albert	.....	43½c per 100 pounds.
Minimum weight for each car, 20,000 pounds.		

In cases where sheep have to be shipped in less than carload lots it is advisable, with a small number, to crate them as they will give less trouble in this way. With any number over thirty it is advisable to ship at carload rate, as the L.C.L. or less carload rate, is much higher. If the number of sheep to be shipped is too large to crate and too small to ship as a carload, they may be shipped loose, penned in one end of the car, upon the issuance of a permit by the division superintendent. In cases of this kind it is always advisable for shippers on the same line of railroad to combine their shipments and then their respective lots may be unloaded at different stations upon the payment of three dollars for the first stopover and two dollars for each subsequent one. In this case the car must be billed as a full carload from initial point of shipment to *final* destination.

#### GENERAL TREATMENT OF THE BREEDING FLOCK.

*The Breeding Flock.*—In order to deal proper' with the care of sheep, it will be necessary to take up as fully as space w permit, the treatment of the breeding flock all the year round. To do this we will commence

with the summer care of the sheep, presupposing them to have been purchased in June or July.

*Summer Feeding.*—After the farmer has satisfied himself that his flock is as free from vermin as a thorough dipping will make them, he is at liberty to plan his campaign of summer feeding and summer treatment. On the majority of farms at this season of the year, the summerfallows will need attention and, generally speaking, the average farm has far more summerfallow than sheep. It is not advisable, especially in the case of sheep from the range, to turn them out in a heavy rank growth of weeds and volunteer grain and to let them eat their fill, as, in the majority of cases, digestive troubles, the most common of which are bloating, scouring and inflammation, will be sure to occur. The sheep should be kept in a grass paddock or field and given an hour or so in the afternoon on the summerfallow, for the first day, gradually lengthening the period until they are left there all day. It should be remembered, however, that after a rain, heavy dew or frost, sheep should not be given access to a rank growth or heavy crop of any kind, and that is the reason for starting them on new pasture in the afternoon. This is especially the case with animals which are corralled all night and are turned out hungry in the morning, as such are far more liable to eat too much of the juicy feed and thus bring on digestive troubles. For this reason, sheep which are penned all night should receive some dry feed ere being turned out in the morning. Where sheep are allowed to graze on the summerfallows, as should be the case, from the time when it is ploughed, there will be no such danger to avoid as they will gradually accustom themselves to the diet. Rough patches of land which cannot be broken, small corners of grass that are not fed over, in fact any uncultivated stubble or prairie, are suitable for sheep and by the use of some posts and a few rods of strong wire netting, or the portable hurdles described in this bulletin, the farmer can fence such places in with small expenditure of time and labour, and thus make something out of what generally brought him no revenue. Patches of land covered with light willow scrub make excellent feeding grounds for sheep, even though there should appear to be very little grass, as the sheep relish and will thrive on the harder feed. The sheep pasture, however, should not consist entirely of such feed, for, especially in dry seasons, and on the smaller farms, there will come a time toward the latter end of August, when feed will be scarce enough, and the provident farmer should make other preparations by sowing some green feed for his sheep.

Sheep should at all times have free access to salt. Irregular salting will only tend to disturb the digestive system and is as bad as no salt at all. A trough or box of salt which is so covered as to prevent the sheep walking in it, should be kept in the corral and care should be taken that it is amply replenished.

*Green Pasture.*—Of the summer feeds, rape is perhaps the best, but oats, peas and vetches are all good. The same precautions as given for new pasture should be taken in placing sheep on rape, which forms a rich diet and must be treated accordingly. A good plan is to sow a drill width of rape around the edge of the summerfallow which will materially assist in keeping the sheep on that particular field, the only trouble being that if the rape makes good growth they are apt to neglect the weeds.

*Care of the Flock.*—The flock should be inspected carefully at least once a day and, if possible, by the same attendant. An old Latin proverb, "*Oves semper infelix pecus*," has it that sheep are always an unhappy or unfortunate flock. They are neither; and the reason for the saying would seem to be that the sheep husbandman gets so accustomed to his flock requiring very little attention, that he ends by giving them none at all, and some accident or disease occurs which assumes serious proportions solely on this account. The careful shepherd, especially with a small flock, notes the ways and manners of the individual as well as the genus, and is quick to note any change. Listlessness, loss of appetite, failure to drink regularly when the rest of the flock do so, lifeless, drooping ears, running at the eyes, and a thousand and one other things apprise the true shepherd of the fact that all is not right, and he is quick to act according to his observations.

*Sickness.*—A sick sheep, especially in the more advanced stages, is one of the most difficult animals to treat successfully. The general prescription of an old shepherd has often proved valuable and that is, from four to eight ounces of Epsom salts, according to the size of the sheep, with a little common salt added, and from one to two hours after, a teaspoonful of sweet spirits of nitre, or a little saltpetre. This cleanses the blood by giving both bowels and kidneys free action, and whilst by no means always successful, is apt to prove so in cases where the commoner disturbances are the cause of the derangement. The reason that this is taken up at this juncture is that it is throughout the summer when the sheep are usually pastured away from home and are thus less liable to be noticed, that sick animals pass unobserved until too far gone to recover.

*Fall Pasture.*—As the summer progresses and grass fails, the sheep should have access to some other crops such as the rape mentioned, the aftermath of the hay meadow, or the edge of the grain field. In sowing oats, or oats and peas for sheep, it should be remembered that these should not be allowed to grow too high ere the animals are turned in. Sheep are short grass foragers and in the first place they are sure to waste a large amount by trampling; in the second, sheep will not enter any crop which they cannot see over. After the grain has grown up above the height of their backs they will not enter it, and though they may do a little damage around the edge, yet this is more than compensated for by the weeds and grass they will pick up on the waste headlands. Thinnings from the turnip fields, when fresh, are also acceptable, and every farmer who keeps sheep should have a few acres of turnips. Sheep should be corralled at night as soon as the fall frosts appear, as frosted herbage of any kind is liable to bring on digestive troubles.

#### PREPARATION FOR BREEDING SEASON.

As the breeding season approaches, the flock should be carefully inspected as to its condition.

*Flushing Ewes.*—In an average year in Saskatchewan, the sheep, if well looked after, will be in good vigorous condition without any further preparation, but where the ewes have been pulled down by their lambs, or feed has been scarce, it is generally advisable to increase both feed and care during the months of September and October, in order to improve the condition of the ewes. This practice is known as "flushing," and it

is claimed that ewes that are quickly brought into good condition conceive more rapidly, and also are more likely to have twin lambs. Certain it is, that such animals will come into season sooner, and will be in a better condition to stand the rigours of our western winters. With ewes that are badly run down, a little grain may be added to an increased or improved roughage ration. This grain should consist of oats, or oats and bran. Whole oats, starting with a cupful apiece and gradually increasing until in from ten days to two weeks three-quarters of a pound per head per day is being fed, give excellent results, and a bushel of oats fed now will do more to carry a ewe through the winter than three times the amount in January or February, when the animal has been allowed to run down.

*Final Inspection.*—About a week or ten days before the ram is to be turned in with the flock, the ewes should be carefully inspected and receive their final culling out. Ewes whose udders have been affected in any way, together with those too old or too poor in condition to nourish the foetus throughout the winter, should be prominently earmarked, and separated from the breeding flock, as should all lambs. It does not matter how forward the ewe lambs are, it is not advisable to breed them the first season. It is true enough that it may be profitably done once or twice, but a continuance of this system reduces both size and virility in the flock, and the general practice cannot be too strongly condemned. Backward or late lambs will not generally breed, especially under natural conditions, and as the natural lambing season is the months of April and May, it can readily be seen that lambs were not naturally intended to take up the duties of motherhood. Ewes being prepared for the breeding season should be allowed plenty of exercise and abundance of roughage, for it should be remembered that the sheep is not naturally a heavy grain eater, and is accustomed to utilise large quantities of bulky fodder as its chief means of subsistence.

*Tagging or Clipping Out.*—At the time the final inspection is made, each ewe should be caught and examined as to the soundness of her udder, and it is also necessary to perform the operation known as "tagging," or "clipping out." This consists of clipping off with a sharp pair of shears the dirty, clotted wool from the inside of the thighs and around the exterior organs. This is especially necessary in sheep that have been feeding on luxuriant pasture as they are apt to be extremely dirty. For this work two men are needed, one to hold the animal in a standing position, the other to use the shears. In the hands of the experienced shepherd, three or four bold strokes will complete the operation and thus avoid, to a large extent, danger of infection to the ram. In some cases, old ewes or ewes which have had trouble during the previous lambing, become extremely foul during the summer. These should be well clipped out and flushed with warm, soft water, containing about as much permanganate of potash as will lie on a nickel, mixed with half a pail of water. The exterior portions may also be washed once or twice with carbolic soap, and in some of the milder cases, this last operation alone is sometimes sufficient.

*Care of Feet.*—At the same time as the clipping out operation is being performed, the feet of the ewe or lamb should be noted, and where these are overlong or wearing unevenly, this may be remedied with a sharp knife, and thus avoid the handling of the pregnant ewe later. The feet should be trimmed as closely as possible without cutting to the quick.

If the sheep are taken off damp pasture for this operation the horn will be found to cut much more easily. Where feet become sore for any reason and the skin around the hoof is broken, or the hoof itself injured, an application of a mixture of crushed bluestone and calomel or butter of antimony (trichloride of antimony) will be found to be beneficial.

#### SUMMER TREATMENT OF THE RAM.

Unless in very small flocks, and preferably even then, the ram should be kept separate from the ewe flock. During the summer months he should be kept with a few wethers, lambs or old ewes, for company, and should be allowed ample exercise. A small grass pen or paddock, providing some green feed, and fenced with woven wire or portable hurdles, with a shed or shade of some sort, is all that is necessary. If the ram is thin after the winter he should receive a grain ration varying according to the size, age and condition of the animal in question. Care should be taken to avoid the putting on of fat, which is extremely detrimental from a breeding standpoint, besides increasing the tendency towards disease. Fat and kidney troubles go hand in hand, and many a good sire has been lost in this way. Old sires put on fat more easily than younger animals, and in some cases it is not only necessary to omit the grain entirely, but also to compel them to take exercise. With rams in low condition, a grain ration up to three-quarters of a pound of either whole oats or oats and bran per hundred pounds of live weight, may be fed in conjunction with ample green feed, but in no case should it exceed this amount, and even then it should be gradually led up to. Where two or more rams are kept, they may be penned together, but they will need careful watching, especially in a large pen, as they may damage one another seriously. Any ill-tempered animal, especially a cantankerous old buck, should be kept alone. The writer has in mind a case where several rams were kept in a small pen. One, a valuable Shropshire, showed signs of failing appetite and condition, and upon investigation was found to have in its mouth a wad of half-chewed hay. Teeth trouble, throat trouble and various remedies therefor were thought of, but an experienced shepherd, on being questioned, at once settled the matter by separating the rams, when the invalid promptly recovered within the course of a few days. The rams had been fighting, and the concussion of their onslaught had evidently affected the jaws of the one, hence the half-chewed feed.

#### THE BREEDING SEASON.

*Preparation.*—Before the breeding season opens, rams should be carefully inspected also, and it is as well to bring them to this period fresh and in gaining condition, for much the same reasons as the ewes are flushed. The feet of the ram should also be trimmed, and the clipping out process, modified according to sex, carried out. The ram should be turned up in a sitting posture and the wool around the end of the penis clipped well away. In this province the breeding season occurs in cold frosty weather, and when the wool is left long, ice is liable to form, and laceration and consequent disablement will ensue if this precaution is not taken. In both sexes, in breeds which are woolled over the eyes, it is sometimes necessary to clip the wool away so that the animal can

see. Where fodder containing spear grass or barley awns is fed, the orifices of the eyes seem to collect these dangerous spikes, and it is just as well to clip the wool around the eyes out on a long slant to minimise this danger. Besides this, in winter, these orifices will fill with snow and ice, completely blinding the sheep. A dose of Epsom salts, from four to six ounces per head, is invaluable for cleansing the system of both sexes ere the commencement of breeding operations. A little care and attention just prior to the opening of the breeding season will go a long way towards ensuring a large, healthy and profitable lamb crop.

The time of the actual commencement of breeding operations should depend almost entirely upon the situation of the flockowner as far as feed and accommodation are concerned. There is little doubt that there is greater profit in early lambs, but at the same time there is also greater risk. The ewes require fairly warm quarters, constant attention and succulent feed until they can be put out on grass. Unlike the majority of farm animals, the ewe will not milk heavily on a dry diet, however nutritious, and the small farmer should bear this in mind.

The beginner should be content for the first season or so with the later crop, and as the period of gestation in the ewe, or time from breeding to birth, is, roughly speaking, five months, ewes bred from the first of December on, lamb early enough. For early lambs, ewes may be bred as soon as they come into season, which is usually during the first fall frosts or early in September, thus bringing the lambs in February.

*Methods of Breeding.*—Generally speaking, it is not advisable to turn the ram loose with the ewe flock for, although the reproductive powers of this animal are extremely great, yet the breeding season only covers from four to six weeks, and the sire will get lots of exercise without running round. In the case of a vigorous mature sire with only twenty or twenty-five ewes to breed, it may be done, but even then it is not advisable.

Several methods of breeding may be followed, two of which can be especially recommended:

The first consists of penning the ewe flock in a small enclosure every night, and turning the ram in with them. Ewes that are in season will be served before morning, and when the flock is released the ram should be separated and kept in a shady, quiet pen, well away from the ewes, during the day time.

The second method is, for the small flock, the most suitable of all, and is known as "hand breeding." It consists of penning the ewes as before and turning the ram in early in the morning. The ram will soon pick out the ewes which are in season, and these should be at once separated from the balance of the flock. If a large number are seen to be in season, the same operation may be repeated in the evening. Four or five ewes may be selected in this way, and the flock then released. The ewes should be turned in with the ram separately, one every two hours, and after a single service should be taken away and placed in a pen or paddock, along with other ewes already bred and away from the neighbourhood of the buck pen altogether. These ewes should be kept separate from the main flock for at least three days, when they may be released. In the case of pure breeds or when the owner is anxious to have a ewe lamb near a certain date, the ewe may be returned to the ram on the evening of the second day from the first service, although they will not always

prove tractable at this time. In general, however, one service is amply sufficient to impregnate the ewe. By this method a healthy, mature ram will serve at least forty ewes and may be given as many as sixty. Some breeders use lambs for a season or so, but this, just as in the case of the females, is not advisable; a lamb should not serve more than ten or fifteen ewes at the outside, and even then the breeder should try these back to a mature proven sire, as lambs, and sometimes shearlings, will occasionally turn out to be non-breeders. A shearling may serve from twenty-five to thirty-five ewes. The beginner will do better to purchase a mature proven sire, and thus avoid the risk of half or no lamb crop. Never let the ram serve his own progeny. Inbreeding in the most experienced hands is dangerous, and as practised by the beginner is little short of criminal.

Ewes that are bred should always be marked, and the easiest and most useful method is to keel the breast of the ram. Keel is a coloured chalky powder, and this or lamp black, mixed with water and smeared on the breast of the ram between the forelegs, makes this animal an automatic ewe-marker. This mixture should be applied fresh daily, and care should be taken not to put it high on the breast of the ram as ewes which are not bred at all will sometimes become marked if this is done. After the ram is smeared the application should not be visible when the animal is standing in a normal position. A good plan is to change the colour each week, and thus the shepherd will be able to tell when an animal is rebred and also can form a rough estimate as to the probable lambing time. With the herd breeding or second system, ewes may be marked by means of a daub of regular marking paint on the back of the head or the top of the shoulder. This should not be made large enough to be unsightly. In the small flock, and especially with pure breeds or early lambing ewes, the *exact date of service should be noted*, as this will save the shepherd much inconvenience and insure proper care at the right time. Where several young rams are turned loose with the flock, it is advisable to place some mature proven sire with them towards the back end of the breeding season, and ensure a full crop.

*Force Breeding.*—Sometimes, especially with young ewes, we find some that do not come into season at all, and these, failing all else, may be held securely and the ram allowed to breed them by force. Ewes will not often conceive from this service but will usually come into season from two to three weeks after having been forced.

*Feed.*—Both ewes and ram should be well fed and cared for during the breeding season, oats or oats and bran, together with good prairie hay or, where possible, clover or alfalfa forms the best diet. For the ewes the grain ration at this time should not exceed three quarters of a pound once per day, and for the ram up to one and a half according to size and condition. The flock should have free access to salt, and should have abundance of pure water.

*Breeding Troubles.*—In some cases where rams are overworked, or have not been clipped out, we may notice that after service, or attempted service, blood marks are left upon the fleece of the ewe. In such cases an examination should be made, and breeding operations discontinued for from four to six days. If there is no external cause and the same thing occurs when the ram is put in service again he should be retired for the

balance of the season. Rams which show a lack of inclination to breed should be treated in the same manner. As both conditions are usually the result of overwork, the logical cure is to cut down the allotted number of ewes, or to follow the hand breeding system. After the first week in January the ram should be removed from the flock, and the regular routine of winter care followed.

*Winter Care of the Pregnant Ewe.*—Now comes the time at which the beginner is liable to commit the most errors, and the chief of these is getting the ewes too fat. *Overfat ewes will not produce strong healthy lambs*, and will not rear them well after they are born, so this state should be avoided. Excess of fat is generally brought about by over feeding and lack of exercise. Ewes should be fed on abundance of roughage, muscle and bone building food, but after the ram has been removed, unless they are very thin, should receive *no threshed grain at all* until early in March when a light grain ration may be commenced. This is especially the case with ewes off the range, which must not be fed grain and must be given ample exercise if a healthy lamb crop is to be expected. For feed, ordinary prairie hay, oat sheaves, fodder, corn and roots, preferably turnips, should be fed and they should be given enough space to take lots of exercise, and if necessary forced to do so, though by this it is not meant that they should be dogged or chased around the yard. Breeding ewes should have from twelve to fifteen square feet of space when weighing about one hundred and fifty pounds and also about one and a half feet per head at the trough in order to avoid crowding and the risk of dead lambs. They generally require about half a pound of mixed bran and whole oats, from two to four pounds of succulent feed, such as roots or cabbage, and about the same weight of roughage. Starchy or oily foods must be avoided. The pregnant ewe must be kept under normal conditions, and should on no account be chased or worried if she is to prove profitable to her owner. A mischievous dog will do more harm in five minutes in a flock of pregnant ewes than the shepherd can undo in twelve months, as even though no apparent damage may be done beyond loss of wind, yet the animals will take fright at the slightest scare and will not settle down to feed for weeks to come. Range ewes are accustomed to being herded by means of a dog, but it must be remembered that it is a trained dog working in trained hands, and pregnant ewes are poor material on which to train a farm dog.

*Housing.*—The ewes should be housed in a roomy shed, which must be kept clean, well bedded and *well ventilated*. It may be common practice to let the sheep shed go uncleared all winter, but it is poor policy; nothing is worse for sheep than damp or wet footing. Abundance of clean, dry bedding should be used, and the building should comply with the requirements as outlined elsewhere in this bulletin. Ventilation is one of the prime factors in the winter care of sheep. The walls and roof of the sheep shed should always be dry, and when the shepherd sees the ewes running at the nose he had best look to his bedding and double his ventilation. The average temperature of the winter sheep shed should be from thirty-five to forty degrees  $^{\circ}\text{F}$ . hr., in this province, but not higher, and there should be no steam when the animals are turned out in the morning. The general rule for winter housing should be to protect from the wind and keep the feet and fleece dry. Salt should always be kept in the shed in a semi-covered trough, and the animals should have free access to pure

water. The feet should be carefully watched, and, if necessary, pared down ere the ewe gets too heavy in lamb.

*Method of Feeding.*—Where grain is fed during winter it should on no account be crushed, the digestive system of the sheep is nothing if not thorough, and there is no fear of unchewed or undigested grain. No more feed should be fed the animals than they will clean up, and both racks and troughs should be thoroughly cleaned out daily. No farm animal is as particular with regard to cleanliness of both feed and water as the sheep, and it is just as well to make bedding of roughage that has been picked over, as they will never eat it anyway. Flax or flax straw should not be fed pregnant ewes unless in very small quantities, and then it is not to be recommended. Prairie hay, or hay containing a large proportion of well cured weeds and willow clippings, is greatly relished by sheep, which will pick out the willow before anything else.

A good system of winter feeding is to place as much hay on the racks in the morning as the ewes will clean up in an hour or so. After dinner if they have not access to water, they should be watered and then fed their oat-sheaves outside, and about three or four o'clock they may receive their root feed and a little oat straw or hay should be put in the racks. Care must be taken, even with this system, that the animals clean up the feed offered them within two or three hours of the time it is fed. With ewes in thin condition that require grain, this should be fed in the morning along with the first hay, and should consist of whole oats and bran. If oat straw is fed it should be used as the evening roughage along with the roots. If the farmer has no roots he should remedy the omission and have them next year. Bran is probably the best substitute, and a little ground flax seed, about two ounces per head, may be introduced two or three times a week.

Oat sheaves should be fed uncut, and the riper they are the less the sheep should get. It is preferable to spread these on the ground outside, and if this is done on the same place every day, the sheep will take ample exercise scraping in the straw for the oats that shell out. Frozen oat sheaves should be fed in moderation, and should be started upon gradually. These are extremely laxative, and should never form more than a minor proportion of the roughage ration. Fodder corn should also be fed uncut outside, but it also is laxative, unless well cured. Roots of all kinds should be sliced, not pulped fine or thrown in whole. Care should be taken that no irregular lumps are thrown in as choking may result. If fed unsliced, they should be cut in halves, and even then the older ewes, whose teeth are beginning to go, will not get much from them. Swede turnips are by far the best root feed, though mangels, carrots and potatoes are also good. The amount of roots per ewe per day may run as high as five pounds per one hundred pounds of live weight, this amount being reached when ewes are about three months gone in lamb, or in February, whilst ewes nursing early lambs may receive from ten pounds to twelve pounds per head per day (after lambing).

*Care of Wool.*—In winter feeding the fleeces of the flock should be kept as clean as possible. To do this care should be taken that no feed is thrown on their backs, and that the feed racks are so built that it is not possible for the sheep to get under them when feeding. A certain proportion of dirt and chaff is sure to get into the wool in any case, but this amount may be greatly reduced by care.

## LAMMING.

*Preparation for Lambing.*—As the lambing season approaches the vigilance of the shepherd should be increased. One end of the shed, or where possible an adjoining shed or building, should be thoroughly cleaned and well bedded with short dry straw. In order to avoid trouble later, the shepherd should provide himself with several sets of light panels about four feet square hinged in L shape. These may be set up across the end of the shed using the side and end walls as the other two sides of the first pen. If the flock is only a small one a few solid pens may be built in one end of the sheep shed. At this season violent exercise or fright, such as is caused by dog worrying, would be extremely dangerous, so that especial care should be taken that the flock is safely corralled at night. With early lambing, arrangements should be made whereby the shepherd will have a supply of hot water at hand, especially if the flock is a large one, as many a chilled lamb can be revived by immersion in hot water and thorough after-care.

It is not difficult even for the beginner to tell when a ewe is about to lamb. If he has the dates of the first two or three ewes to come in and watches them carefully as their time falls due, he will easily recognise the symptoms. The ewe usually becomes restless and may separate herself from the rest of the flock. She may lie down and rise up frequently and will foreshow by her actions the approaching event. Ewes which are healthy and have been well cared for should have no difficulty in giving birth under ordinary conditions. The shepherd should be on the spot and may, even in normal parturition, give valuable assistance by easing away the lamb until the head and shoulders are out. The rest of the body should then come comparatively easily. As soon as the head is well clear the nostril and mouth should be wiped clear of any mucous or adhesive material in order to enable the animal to breathe freely. After the lamb is born, the ewe and her offspring should be shut in a small panel pen, as above described, when she will immediately proceed to lick it dry. If the afterbirth does not come away within four or five hours of lambing, the ewe should be given a pint of warm gruel.

*Tagging.*—The shepherd should carry a pair of short bladed sharp shears, and ere releasing the ewe should turn her on her back and clip away all tags of wool, etc., around the udder, as sometimes the lamb will get hold of one of these in trying for the teat, and derive poisonous material instead of nourishment. At the same time the shepherd should note the condition of the udder, which should be wiped clean, and, as it is sometimes necessary to assist the lamb to take its first suck, this may be done when the ewe is on her back. To clip around the udder it is necessary to place the ewe in a sitting posture against the knee with the head over the left knee, and this is also the proper position in which to initiate the lamb.

*Teaching the Lamb to Suck.*—The milk may be started with one hand and the lamb's nose brought to the teat with the other. The teat should be inserted, and generally the lamb will commence to suck without delay. In order to do this it is not necessary that the lamb should stand, as it may be laid down and still retain its hold on the teat. It should be afterwards noted whether the lamb helps itself or not, and if not, the operation may be repeated, though as a general rule this is not necessary.

Abnormal or difficult presentations sometimes occur when the ewe will require a good deal of assistance from the shepherd. The best advice that can be given is for the novice to watch several normal presentations carefully, and then he will be in a position to give intelligent assistance. The hand should be washed and greased, preferably with carbolised vaseline, after which the cause of the difficulty may be ascertained and corrected. Lambs sometimes come hind feet first and may be safely delivered in this way.

*Care of New-born Lambs.*—When the lambing season is in February or March, it is imperative that the lambing shed be kept fairly warm, and if this is not possible, some pen or corner may be protected and warmed so as to give a little added heat. When extremely cold, the pen in which the ewe and lamb have been put may be covered with a horse blanket and a lighted lantern, firmly secured, hung under the blanket. This will increase the temperature in the pen several degrees, though there is danger of fire unless great care is exercised. Especially with twins or triplets, which latter sometimes make their appearance, there is danger of the first lamb becoming chilled. To avoid this, it may be folded in a warm dry blanket until it can be attended to by the mother. Be careful not to smother the lamb when this procedure is followed. Some sheepmen half fill a box with warm bran and cover the lamb in this up to the neck. Sometimes lambs are not discovered until they have been born some little time and are chilled through; the best remedy for these is to immerse them up to the neck in moderately hot water, leaving them in for a few minutes and thoroughly drying them off afterwards. If badly chilled some hot water may be added to maintain the temperature. In order to dry the skin of the lamb and at the same time entice the ewe to lick it, some dry bran may be spread over the little animal and rubbed in lightly, much as sawdust is rubbed on a horse's legs to dry them. The ewe will lick at the bran, and the licking helps to start the circulation of the new born animal, and thus sets in motion the body functions.

From eighteen to twenty-four hours after the birth of the lamb the ewe should be milked out. The ewe and lamb should be kept separate from the main body of the flock or with other ewes which have lambed for three or four days or until the little ones have begun to be able to take care of themselves in some slight degree at least.

*Shy Mothers.*—In cases where the ewe will not mother the lamb, as is sometimes found with young ewes, or when the ewes are very thin in condition, it may be necessary to tie the ewe up and then hold her to prevent her kicking, until the lamb gets used to her and she to it. It may even be necessary to place her in a narrow or "squeeze" pen so that she is compelled to stand. The pen may be made by placing the ewe against one of the portable panels, and securing her head either by tying, or placing in a small stanchion and then tying another hurdle at her head, about eighteen inches from the other; the second hurdle may then be brought round until the ewe is held firmly between the two, and the lamb may be started at the teat without much danger of interruption. This practice should only be followed as a last resort. A common plan and one often attended by success is to take a dog into the same pen as the ewe and lamb when, as a general rule, the ewe will show fight, and, the protective spirit once aroused, will be more liable to mother the lamb.

*Foster Mothers.*—In cases where ewes lose their lambs and it is desirable to place a twin from some other ewe upon them there are two methods which may be followed. The first is to skin the dead lamb and fasten the skin on the living substitute so that shoulders, back and rump are covered. This skin may be left on from thirty-six to forty-eight hours. The second and simpler method is to wash with clean, warm water, but no soap, the head, shoulders, back and neck of the lamb, and then to take some milk from the foster mother and rub it well on these portions of the animal. The ewe recognises the lamb by smell, and if this is carefully done it should prove successful.

*Hand-raising Lambs.*—Lambs whose mothers have died, and for whom there is no foster mother, may be raised by hand. An ordinary large nipple, preferably the kind which fits over the neck of a bottle, should be secured and a supply of them kept on hand, for, as the lambs grow older, their teeth will play havoc with the rubber. A pint bottle should be used and ordinary cow milk diluted with warm water at first and slightly sweetened is the best substitute for ewe milk obtainable. The lambs will soon accustom themselves to this mode of feeding and will thrive well. Care should be taken never to give them sour, cold or nearly cold milk, as nothing is more apt to produce scouring. Both bottle and nipple should be scalded once a day. The milk must be sweet, and at first should be diluted with about fifteen parts water to one hundred of milk. Do not allow the young lamb to take too much. It is a good plan to leave them hungry, although their appetite will develop marvellously in a few days.

*Udder Troubles.*—The ewes and lambs must be carefully watched for the first few days, and when a ewe refuses to let the lamb suck, she should be turned over and her udder examined. In cases of this kind prevention is a thousand times better than cure, as the udder is hard to right.

On no account should there be any ice, snow or damp footing left where the freshly lambed ewes can get to it. All such places should be covered with dry straw. The reason for this is that the udder for the first day or two after lambing, especially in the farm flock, is apt to be more or less inflamed or irritable. The ewe finds on lying on some extremely cold or damp spot that the pain or discomfort is allayed and consequently seeks such places. The sudden change of temperature is apt to produce congestion and later inflammation, garget or any of the various udder troubles which are so difficult to contend with. It is true that under range conditions ewes have access to all sorts of places, but it should be remembered that lambing on the range generally takes place after the snow is gone, and also that range ewes are usually in much lower condition than farm wintered flocks, and thus the blood pressure on the udder, and subsequent chances of disease, are greatly lessened. Ewes should be watched carefully, and when one is seen to be off feed or listless the udder should be examined at once.

When the udder is found to have gone wrong the ewe should at once be isolated and the part fomented with water as hot as the shepherd's hands can bear. Care should be taken not to blister, but unless the water is really hot its value will be nullified. If the trouble is advanced and the udder hard and discoloured, a hot poultice made of bran and very hot water should be applied and fastened firmly to the part. It will sometimes be necessary to tie the legs of the ewe so that she cannot get up in order to keep the poultice in place and it should be renewed as it cools off.

After poulticing, the udder should be greased and kneaded with the hand, not roughly, but gently, and as much milk or fluid extracted from the teats as possible. The aim of the shepherd should be to keep the udder from suppurating and breaking out, as if this happens the value of the ewe as a breeder is usually at an end. The ewe should be kept in as warm a place as is convenient, and should not be exposed to dampness or cold winds. Care should be taken to *isolate* all ewes whose udders have gone wrong and after attending to one whose udder has broken out, or milking out a sick ewe, the shepherd should wash and disinfect his hands ere working with the sound sheep. When the lambs begin to grow older, sore udders are sometimes the result of sharp teeth, and the mouths of the youngsters should be examined for pointed or rough incisors which may be at the root of the trouble, and which may be smoothed by rubbing with a thimble or light file.

Ewes lambing in grass will not need so much attention, but care should be taken that they do not get run down, and a little grain during March will help greatly if thin. A small paddock of portable hurdles should be set up on some high dry knoll, and the same precautions observed as given for early lambs. Generally speaking, for farm flocks, it is advisable to have the ewes under cover for a day or so at least, owing to the uncertainty of the spring season.

#### FEED FOR EWES AND LAMBS.

Freshly lambed ewes, unless in poor condition, should receive no threshed grain for the first two or three days after lambing. After the lamb gets big enough to clean out the udder, a little wheat bran may be fed and the quantity gradually increased, but even this, with well nourished ewes, is not necessary. Care should be taken, however, that it is not fleece alone that is responsible for the supposed condition of the ewe flock, as this is sometimes very misleading. Good prairie hay, oat sheaves and an abundant supply of roots are better than any grain that can be fed. For the man who wishes to bring early lambs through in good condition, roots are essential, and as they can be grown anywhere in the province, the only drawback in keeping them will be the necessity of a root cellar, root-house or pit of some kind. It is not generally advisable to give the fresh-lambed ewe ice cold water to drink, and, if this has to be done, the amount should be limited. It is surprising how soon the young lambs will begin to eat, and they should be given free scope in this regard. For this purpose a creep should be erected. There are two kinds—one consisting of a narrow passage way leading into another pen, so narrow as to exclude the ewes, and the other of a hurdle or panel, set so low that only the lambs can creep under, hence its name. In the second pen should be placed a trough or troughs, long enough to give ample room to all the little ones that may wish to feed. This trough may be filled with chopped oats from which the hulls have been sifted by passing them once through the fanning mill. These oats mixed with bran, and preferably crushed, not powdered, oil cake, form the best feed for the growing lambs. In order to accustom them to the feed they may be placed in the inner pen when they will soon find the way back to their mothers, though they might be some time going the other way, of their own accord.

Choice clover, alfalfa or well cured hay should be placed in the lamb's rack. In order to milk well, the ewe which lambs before the grass comes

must have succulent food of some kind, such as turnips, carrots or mangels, and should receive abundance of roughage. A heavy grain ration fed to the ewes is apt to produce scours and other digestive troubles among the lambs. Wheat in any form is not good for either ewes or lambs, as it is too fattening and starchy. It may be fed to the ewes as a minor proportion of a light grain ration, but more than that is not advisable for the breeding flock.

*Troubles of Young Lambs.*—There are several troubles which may afflict young lambs, and the more common of these are diarrhoea or scours, constipation, sore eyes, sore lips and mouth.

Diarrhoea, or in fact any digestive trouble in the lamb, is generally the result of improper feeding of the ewe, such as too heavy feed or sudden change of feed. If the lamb has become separated from the ewe for any length of time, it should not be allowed to suck the milk the ewe is carrying, and she should be at least partially milked out ere it is allowed to suck.

Constipation may be cured by reducing the grain ration of the ewe or by a rectal injection of half a cupful of soft warm water which has first been boiled, and to which a little glycerine has been added.

Sore eyes is another form of disease found amongst young lambs, and it is a most distressing sight to see a flock with this affliction from which, if not cared for, they may become totally blind. The remedy is, however, simple and efficacious, and consists of washing the face clean and smearing with a strong coal tar dip solution, some of which should be allowed to enter the eye itself; if carefully done the cure is certain. Any coal tar dip or byproduct, such as Cooper's Fluid, Naphtholeum or Zenoleum will answer the purpose.

Sore mouth can be cured in the same way. The affected parts should be washed and rubbed with a stiff brush, and then any coal tar dip should be applied. If the trouble has spread to the udder of the ewe the same treatment will apply.

#### DOCKING AND CASTRATION

These should take place when the lamb is from six to ten days old. The older a lamb gets the more severe, serious and dangerous these operations are. In both cases three things are necessary, absolute cleanliness, sharp instruments and common sense.

*Docking.*—In order to dock a lamb properly a wooden mallet and sharp chisel are necessary. An attendant sits astride a log or bench with the lamb's back against his breast and its tail lying along the solid wood. The attendant grips the tail close to the body and pulls the skin of that appendage toward the lamb's body. The operator then locates a joint, which is between two protuberances of the vertebrae, and placing the chisel thereon, detaches the tail with a sharp tap of the mallet. When the skin of the tail is drawn up previous to the operation it slips back on being released, and not only affords some protection and covering for the end of the bone, but also enables the stump to heal more quickly. In lambs that are over two weeks of age, it is as well to tie a piece of twine tightly around the tail above the point where the cut is to be made. This may be left on for a few hours after the operation and helps to stop the bleeding. Some shepherds use a red hot chisel, which effectively prevents bleeding. A pair of pincers like large shoeing pincers, but heavier and with wider blades, are also recommended. These are heated and the tail of the lamb is run through a hole in a board and pinched off. The board protects the lamb's hindquarters from the heated iron. For male lambs

the tail should be left from an inch to an inch and a half long, and ewes from two to three inches. There is nothing more unsightly than a flock of mature sheep with long tails, and there is nothing betrays carelessness on the part of the shepherd as quickly as this neglect. Docked animals look neater and more uniform and have a rounder, fuller appearance of hindquarters, besides being more cleanly.

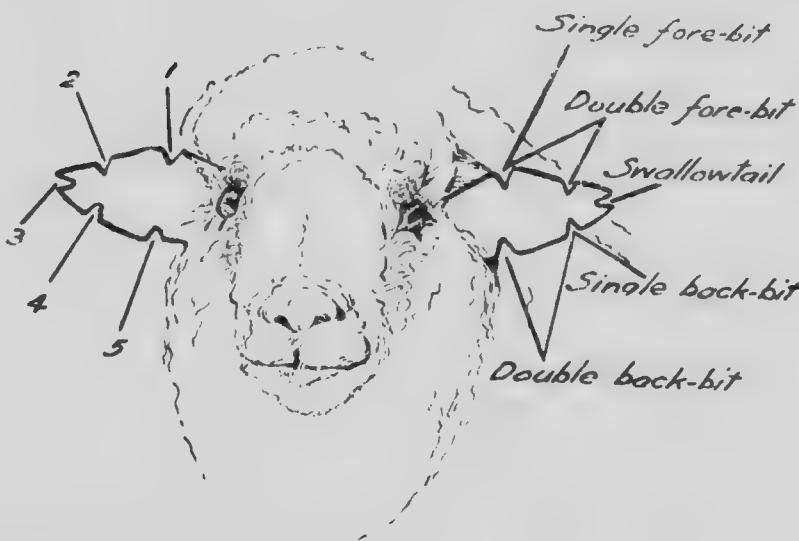
*Castration.*—Castration is usually performed at the same time as docking, and this, too, is all important. On no account let the grade male go unattended and, even with pure breeds, keep only the best and strongest if you wish to establish or maintain your reputation as a shepherd. There is a special lamb emasculator which may be procured, but, as the average beginner does not usually possess such an instrument, we will describe the common method.

An attendant is necessary to hold the lamb much in the same position as for docking. With a sharp knife the lower portion, about one-third of the scrotum or bag, is cut off. The testicles are then skinned out, withdrawn one at a time, and the cord severed. In older lambs over three weeks of age it is well to tie the cord with a piece of silk or fine twine which has been dipped in some disinfectant solution, ere severing the testicle. In older rams the testicles may be removed by severing the entire scrotum with the heated docking pincers, care being taken to protect the body from the hot iron. The wound should always be washed with carbolic acid and water and smeared either with carbolised<sup>1</sup> vaseline or pine tar and lard. Late lambs, which can be placed on grass, usually heal up quickly and without trouble. Where the lambs come earlier it is imperative that the pen be kept clean and dry and not too warm. Abundance of bedding and ample room for exercise are two very necessary adjuncts to health after castration. If there is any soreness or swelling the second day after the operation, the wound should be bathed with carbolic acid and hot water and again anointed with vaseline. The ewes should not be fed very heavily at this time and care should be taken not to change their feed until the lambs have recovered from the effects of the operation.

#### MARKING LAMBS.

As it is extremely difficult to tell one lamb from another, and as this is sometimes necessary, especially in the case of pure breeds, a simple way is to nick the ear; this may be done either with a regular marking pincers or with a sharp knife. The first lamb may have a nick taken out of the upper edge of the right ear, the second out of the lower edge, the third the upper edge of the left and so on. These marks may be duplicated and triplicated. A single nick from the upper edge of the ear is known as a single fore-bit; from the lower edge, a single back-bit; a double nick as a double fore—or back-bit, as the case may be. A nick out of the point of the ear may be also used, and is known as a swallow tail. A common, though unsightly mark is made by cutting off the end of the ear. In farm flocks this generally signifies that the animal is destined for the block, being no longer fit for breeding purposes. For pure breeds the regular steel ear tags should be used, and inserted as soon as the ear is firm enough to hold them, which should be before weaning. In order to make sure of the identity of pure bred lambs, they should be separated from the mothers for an hour or so (but not long enough for the ewe's udder to become full as, if this is the case,

they will often let any lamb relieve them). They then should be marked and the ear tag number of the ewe set down opposite that of the lamb in the shepherd's note book. Tattoo markers, consisting of a many pointed punch which injects a coloured pigment, is highly recommended for lamb marking. For grades the nick or bit system of marking may be used, and it is just as well to give all the males of one season's crop a certain mark and all the females another. The mark is recorded in the shepherd's note book, and by this means yearlings, two shear and three shear animals, and so on, may readily be distinguished and cut out. This system is in general use on the ranges, where it is invaluable.



*Fleece Marking.*—Fleece marking is often followed in large flocks. The instrument used is generally in the form of a letter or special device such as a cross or circle, and may be made of either wood or wire with a handle affixed. Heavy wire is more easily fashioned into any form and should then be closely wrapped first with cotton batting and then with a long rag bandage. Thus the figure 8 made out of wire could be wrapped until about half an inch wide. The marking material may be specially purchased, or a mixture of lampblack and linseed oil will also serve. There are special wool marking appliances for sale which may be obtained by the large flock owner at a moderate price.

Small metal ear tags for lambs cost from \$1.25 to \$1.50 per hundred, whilst full size sheep tags cost about \$2.00. It is advisable to place the breeder's private tag always on the one side of the sheep and the association or registration tag on the other.

## SHEARING.

*When to Shear.*—This brings us up to the time of shearing which should occur soon after all seeding operations are over, from the tenth of June to the first of July. The more heavily fed the flock is, and the better condition the animals are in, the earlier they will shear, but as a rule it is not advisable to clip in Saskatchewan until the twentieth of May at the earliest and range stuff will seldom be ready before that time. Other things being equal the earlier one can clip after this date, the greater will be the advantage, for ewes not only feel hot weather greatly but are bothered by the vermin which, in even the cleanest flocks, are present at this time of year.

In the event of a rain storm, unshorn ewes will stay out until their fleeces are soaked through, and keep the lambs out with the risk of being chilled, whilst shorn ewes will seek the shelter which should always be at their disposal at this time of the year. Shearing, especially if the subsequent weather is cold, will materially reduce the milk flow of the ewes. This should be borne in mind and an increased or enriched ration fed to counteract this for a few days at least.

*Methods of Shearing.*—There are two systems of shearing, the old and the new—the hand and the machine. Whilst the majority of our best shepherds are accustomed to the former method, there is much to be said for the latter which is quicker for the novice, easier on the shearer, and gives a more uniform result.

There is no doubt that the machine feels awkward to the experienced hand shearer, but this can be overcome by practice. Some ranchers discriminate against the machine on account of the fact that it shears so close that the animals are more liable to be chilled in the event of bad weather after shearing. Careful handling will help this and there is an advantage in that there is little or no spoiled fleece resulting from the staple being cut in halves, or from double cuts, which cause short fibres. On the other hand, we have the fact that whilst the old hand shears cost from \$2 to \$3, the machine will cost from \$12 to \$18, and requires two persons to operate it. As a general rule it is better to permit the shepherd who is accustomed to the hand shears to use them, and as the majority of beginners will use this system to commence with we shall start by explaining it.

The requirements for hand shearing are—a pair of seven inch shears, of which the make known as the Burgon and Ball, is highly recommended; a pail of water, and a whetstone. As those who are proficient enough to use the hand shears are likely to know the simpler details, it will only be necessary to say that as a general rule new shears need setting which may be done by means of a vice.

The old shearer generally fastens the shears to his hand by means of a small strap which passes round the back of the hand, and the spring of the shears, and holds them in position when the clasp of the hand is released as in clipping, and which saves them being knocked out of the hand by any sudden struggles on the part of the sheep. Some shearers use a bench which can be easily made. This saves the back a good deal and is a great help in the day's work. The shearing should take place on a level floor or low platform in a well lighted position either inside or out. The following are the positions in shearing, with the animal on the ground, or preferably a low level platform.



FIG. 1.



FIG. 2.



FIG. 3.



FIG. 4

1. Place the sheep in an upright position on the platform with its back to the shearer whose right leg should be held tightly against the belly of the sheep between both front and hind legs. (Fig. 1). The left leg should be held firmly against the animal's back and the head should be held across the left knee by means of the left hand which grasps the lower jaw. Then commence shearing at the point of the brisket and run up to the ear, shearing the neck lengthwise, but never across.

2. Shear the shoulder and front leg around to the back bone, being careful not to cut the skin for fear of blood poisoning. The sheep should always be held so that the skin is stretched as smooth and tight as possible in order to minimise this danger. The shearer should have a pot of tar at hand and should liberally besmear any cuts made ere releasing the animal; the tar not only keeps the flies away, but serves as a disinfectant. Hold up the left foreleg of the animal (Fig. 2) until the under side is trimmed then start well back on the belly and shear the ribs down to the hind leg working across the body all the time. With experienced shearers this only requires a few clips.

3. Then place the left hand against the hind leg at the flank or knee joint (Fig. 3) holding the limb firmly in a horizontal position whilst you commence shearing at the hock or gambrel joint, and clip around to the back bone. Hold the leg in the same position till you finish shearing around to the tail so that the sheep cannot kick back against your shears and cut the tendon in the back of its leg.

4. When the tail is shorn, place one leg on each side of the sheep and take one full clip (shear width) up the back bone to the head. (Fig. 4).

5. Then (Fig. 5) place the left leg between the hind legs of the sheep with the right leg held firmly against the back of the animal whilst you shear the balance of the neck and shoulder. Hold the front leg of the animal firmly under your leg until that limb is shorn when it may be let free. Shear down the ribs to the hind leg as before in as few clips as possible.

6. Place the hand firmly against the hind leg at flank as before, preventing the animal from kicking whilst that limb is shorn. (Fig. 6).

7. Trim the inner side of the hind leg with the sheep lying partially on the ground and the head still held against the left knee. (Fig. 7).

8. Straddle the sheep whilst holding it in a sitting or vertical position, (Fig. 8) whilst the belly is shorn, being careful not to cut the brisket, which rests on the ground when the sheep is lying down, and thus is more liable to be infected and cause great pain and irritation.

**NOTE.**—There are other positions used in shearing, but those mentioned are most commonly used, over two hundred sheep having been shorn in little over ten hours by an expert following the above method.

**Machine Shearing.**—For machine shearing, practically the same advice as to position may be followed. It is advisable to cut as long as possible as, especially in midsummer if the ewes are shorn very close, they are apt to suffer from sunburn and flies, and if earlier in the season, from chilly weather or cold rains.



FIG. 5.



FIG. 6.



FIG. 7.



FIG. 8.

Harper gives the following advice for machine shearing:

"With the sheep before you and facing to the left, grasp it by the right hind leg with the left hand and gently but firmly place it on its rump, in an upright position, the shoulders resting against the shearer's knees, with the machine to the right. It is important to remember that the sheep should always be turned to the right. With a little experience this can be done with the feet, leaving the hands free for the real work. Another essential always to be borne in mind is to hold the sheep in such a way that the skin is stretched tight on the part of the body that is being sheared. Never place the left hand in front of the shears, as you will surely cut the sheep (if you are right handed)."

"With the sheep held firmly between the knees, part the wool at the forward end of the brisket and run the shears down as far as the pit of the stomach. Clip the wool from the floor of chest as illustrated (Fig. 8, hand shearing). Place the front legs behind the left arm and run four swaths down the right side from the fore legs to the flank. Next run the shears across the belly from right to left, clipping the wool from the belly and flank and inside of hind legs (holding sheep as in Fig. 6, hand shearing)."

"Straighten up the sheep, resting the head against the knee as at first, take hold of the sheep (as in Fig. 2, hand shearing) and clip the wool along the under side of the neck, starting the shears at the brisket, and run upwards, coming out just below the ear. Clip the wool from the neck (as in Fig. 1, hand shearing) slightly to the right, the sheep's feet pointing towards the machine and clip the wool from the side and the back (as in Fig. 2, hand shearing)."

From this on the directions are practically the same as for hand shearing, the most important points to bear in mind being to keep the hide stretched tightly, and in turning the sheep to turn it to the right always. This prevents the feet from getting mixed up in the fleece and enables the shearer to keep it in a compact pile. Where shearing is not done on a platform or bench, it is advisable to spread a canvas sheet to keep the wool clean. Sheep should be shorn dry, and after shearing the wool must be kept absolutely dry.

*Tying the Wool.*—The fleece should be rolled up with the belly wool and loose ends inside and the cut ends out. Badly tagged or clotted wool should be separated ere the fleece is tied. Care should be taken *not to tie the wool with binder twine*. Pieces of the twine known as sisal or hemp become detached and mixed with the wool, from which it is impossible wholly to separate it. Consisting as it does of vegetable fibre it will not take dye and appears as an unsightly mark in both yarn and cloth, consequently wool buyers will discriminate against it, and the farmer who ties with binder twine will receive a lower price for his wool. Special wool twine can be obtained for the purpose which is either made of close spun jute or, what is better still, of paper.

*Packing the Wool.*—Wool should always be packed in bags, and the same warning as regards twine should be observed for them also. Wool must not be packed in bran or gunny sacks if the farmer is to find ready and profitable sale for it. Special jute bags from which no fibres can become detached are sold throughout the West, and the address of the

nearest dealer in these commodities may be obtained by writing to the Live Stock Branch, Department of Agriculture, Regina. Paper lined bags are strongly advocated.

In tying wool it is not necessary to compress it into a small bundle, as buyers prefer loosely tied fleeces, and in the packing into bags it is generally sufficiently compressed. The bags used are larger than the ordinary grain sack, and it will always pay to have a good set of bags on hand. After the bags are packed full they are sewn up. With large bags it is generally advisable to leave ears or lugs when sewing, in order to facilitate handling.

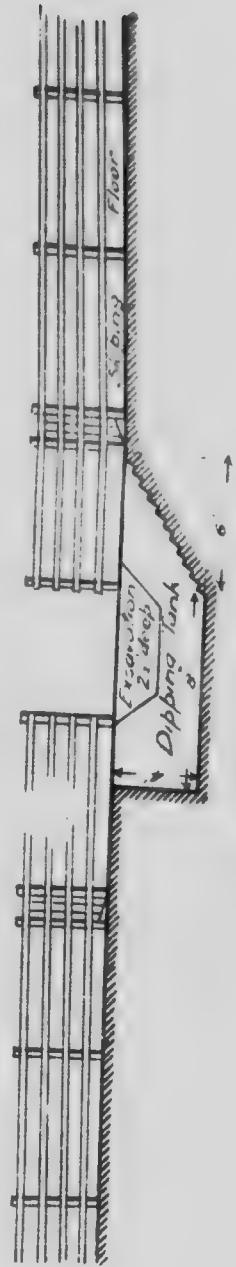
#### DIPPING.

Dipping is one of the most important factors in successful sheep keeping, and no farmer who keeps sheep should be without conveniences for this work. Sheep should be dipped at least twice a year. They not only thrive better and, in fattening, make greater gains for the amount of food fed, but they are also more healthy and contented, and the farmer who dips regularly is taking the best preventive measure possible against infection from seab or other contagious diseases, which may render a farm, or even a district, unfit for the keeping of sheep, unless properly looked after.

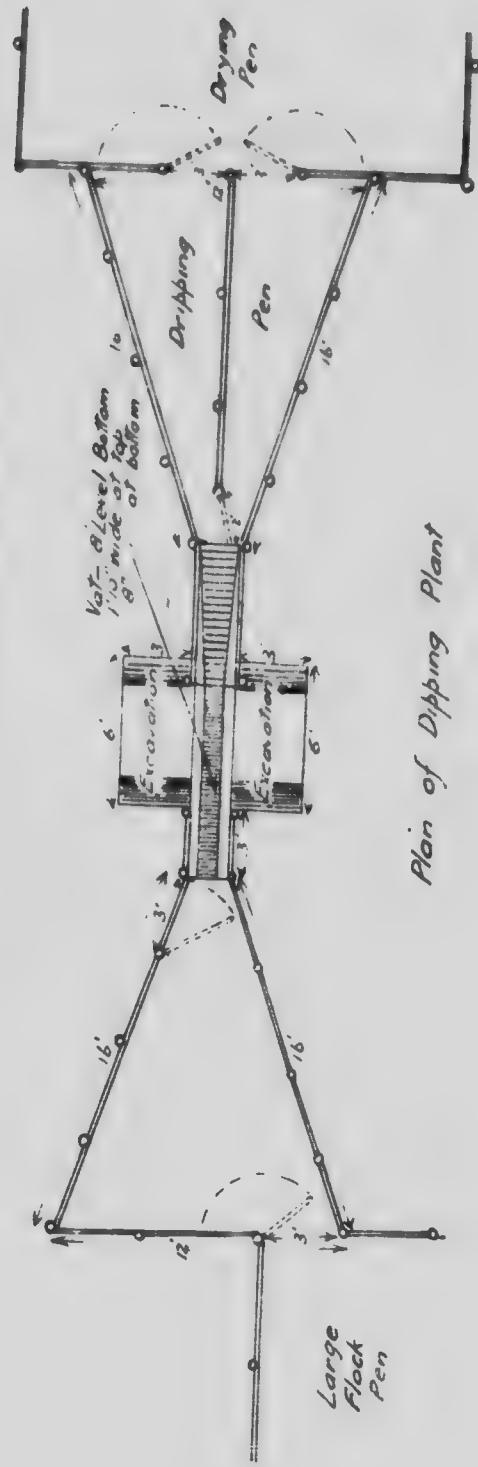
Sheep should be dipped after shearing, but not too soon after, for two reasons—one is, that the fleece is so short that they retain little or none of the dip and thus reduce the efficacy of the operation, and the other that in the case of animals which have been cut in shearing there is greater danger of infection, especially with poisonous dips. The first dipping should take place about three weeks after shearing, and at this time the lambs also should be dipped, as, if not, any vermin that are left alive on the ewes will congregate on them and they will suffer accordingly. For the first dipping it is generally advisable to use a nonpoisonous dip, preferably one of the coal tar varieties, such as Zenoleum or Cooper's Fluid. These should be mixed as directed, although it is common practice to make the mixture slightly stronger, and if dipping for seab it should be twice as strong as that used under ordinary conditions. The reasons for using a nonpoisonous dip after shearing are, (1) The dip does not require to be as strong at this time as the fleece is off, and it will be certain to reach all parts of the skin. (2) There is not the same danger of sickness caused by animals, especially lambs, being immersed and swallowing dip, or of infecting and causing blood poison in sheep which have been badly cut in shearing. (3) Sheep have not the long winter ahead and will remain reasonably clean until the fall dipping.

Where possible at all the dip should be mixed with hot water, as it not only mixes better with the dip but has greater penetrative power. The water should be as hot as the operator can comfortably work in. If necessary, the water may be softened by the addition of enough concentrated lye to give it an oily feeling. With a large flock, the vat should be so built that the animals are immersed for at least one minute in passing through. As a small flock is generally dipped by hand a smaller vat will serve.

*The Dipping Vat.*—This should consist of a large trough or vat of concrete, metal or wood (wood for preference) from eighteen to twenty-two inches wide at the top and from six to eight inches wide at the bottom.



Cross Section of Dipping Tank and Pens



Plan of Dipping Plant

It must be so narrow that sheep cannot turn around in it, and the smaller it is, whilst workable, the less of the mixture it will take to fill it. It should be deep enough so that the sheep may be entirely submerged, the average depth being about four feet. The length of level bottom will be determined by the size of the flock. In small flocks it may run from four to six feet, but the shorter the vat is the longer it will take to dip the animals, and the more handling they will require; about eight feet is considered to be the standard for the small flock. The one end of the vat, at which the sheep are put in, should be perpendicular, and the other should slope gradually up, being well cleated or ribbed to afford footing. The vat should be sunk level with the ground, which should be excavated about six feet on each side of the tank to a depth of two and a half feet leaving two and a half feet of trough above the ground level. (See illustration.) This enables those who are attending to the immersion of the sheep to do so without the inconvenience caused by excessive stooping. The edge of the trough then is about the right height to bend over. At the end of the incline there should be a concrete floored dripping pen, the floor sloping back towards the incline from the vat so that the dip carried out by the sheep may not be wasted. The dripping pen to go with a vat as described should be divided into two halves or pens, the division running the same way as the dipping trough with the entrances into each division just at the top of the incline coming out of the vat. A swinging gate operated by an attendant or simply turned one way or the other and left closed, will determine into which pen the dipped sheep go. When one pen is full the gate is shut on them, thus leaving the other pen open, and when it is nearly full the sheep in the first pen are released into a large pen, which should be as high and dry as possible and the operation repeated. The slope of the floor of the drip pen should be about four inches in ten feet.

The accompanying illustrations will give some idea as to the method of building one of these vats. The vat in question is made of concrete and the depression in the ground as shown was excavated by means of a team and scraper. The pen in which the sheep are collected for dipping should open at the back end of the vat and should be relatively small, so that the animals may be more easily caught or driven into the vat. A larger pen where the flock is collected should open into it.

A concrete vat as per illustration may be made by excavating the vat proper and then filling in the concrete in forms. The side excavations should not be made until the cement has thoroughly set. It is as well to set all permanent posts in cement also. The cleats up the incline from the vat may be made by sticking two by four scantling on edge in the soft cement, leaving from one and one-half to two inches sticking up. Care should be taken that these cleats are not the full width of the tank. There should be at least two inches between each end of the cleat and the vat wall in order to let the dip run back from the drip pen.

*Method of Dipping.*—With a small flock of sheep the easiest way is to catch them one by one and lower them into the tank hind feet first. The attendant then submerges the head at least twice, and in short vats holds the animal the required time. For ordinary parasites such as ticks, lice, etc., the sheep should be immersed for at least one minute. Where there is danger or suspicion of seab infection they should be in the dip at least twice that length of time. Lambs should be dipped as well as the ewes,

although it is generally advisable to put them through last when the amount of dip in the tank has decreased, as it will not take so much to cover them.

Some trouble may be experienced after the spring dipping in getting ewes to own their lambs. Both ewes and lambs present an altered appearance after being dipped, and the smell of the dip is apt to keep the ewe from recognising her lamb for some little time. For this reason it is advisable that the lambs be marked before dipping and also that they be separated from the ewes some little time before the operation. This is also advisable as the lambs should be dipped separate from the ewes. It is not generally advisable to let the lambs return to their mothers until the ewes are fairly dry, which will take from two to three hours on a fine day. Heavy milking matrons should be relieved of some of their milk ere the lambs are turned in, in order to prevent them gorging themselves. In dipping for scab it will be necessary to dip twice, with an interval of about two weeks between as the dip will not destroy the eggs.

*Second Dipping.*—For the second dipping a warm day in September should be selected and the same instructions followed as for the spring operation. The water should be hot, and it is advisable at this time of year to use one of the powder forms of poisonous dips as it has been incontestably proven that these have greater lasting properties than the non-poisonous. All the sheep on the farm should be dipped at this season as they will winter better if thoroughly clean. On account of the greater amount of fleece carried in the fall it will take nearly four times as much of the dip mixture to dip the flock. In the spring when the fleece is short, with a proper draining pen which returns the waste dip to the tank, it should not take more than one quart per sheep whilst in the fall it will take about a gallon.

At both dippings, in the case of small flocks, the draining of the fleece should be assisted by an attendant running his hands over the body of the animal. This is particularly necessary if the sheep carry heavy fleeces.

#### SUMMER FEEDING OF EWES AND LAMBS.

Both ewes and lambs should be kept on good pasture and if this is not possible they should receive an ample complement in the shape of hay or other well cured roughage and a grain ration consisting of whole oats and bran about half and half by volume. It is imperative, whether the lambs are being raised for feeding or breeding purposes, that they should receive no setback if they are to give the most profitable results. Where possible they should be penned on cold wet days until they are about three weeks old, when they are not so liable to suffer. Ewes and lambs should not be turned out in a field with horses, as sometimes these will chase and trample on the sheep, more in play than anything else, and often do serious damage. An instance of this kind may be cited where a mare in the same pasture as a bunch of Shropshire ram lambs, ran at one and seized it with her teeth, afterwards trampling on it so that it died. She also badly lamed another, and was pursuing a third when driven off. This mare had never before shown any viciousness and was a singularly well behaved work animal.

Lambs to be kept for breeding purposes should receive some grain for three or four weeks at least, and this should be fed by the creep system,

already referred to. Rolled oats as a first grain food and later a mixture consisting of, by volume, about forty parts of chopped oil cake or ground flax, to sixty parts rolled or crushed oats makes excellent feed for lambs. This may be fed twice in the morning and evening, and care should be taken to clean the troughs out thoroughly after every feed. As the lambs grow older the chopping of the oats may be done away with, but it is advisable at least to bruise them well, until the age of eight weeks is reached. If on good pasture the grain ration may be discontinued after the lamb is from six to eight weeks old, as it is not advisable to have them too fat. A small amount of grain once a day will always help the growing lamb, which requires an abundance of body building food. As a general rule, lambs are weaned at from ten to twelve weeks old. As they approach this age preparations should be made for weaning. The flock should be turned out on succulent pasture and after they have been there for a few days the ewes should be withdrawn to scanty pasture for a half day and then driven in, and the lambs allowed to clean them out. Heavy milking ewes should be relieved of part of their milk, as even at that age the lambs may gorge themselves. The ewes should be again separated and kept away from the lambs until the following morning, when the operation may be repeated. It is not easy for the majority of farmers to follow this system, but it is the best for both lambs and ewes. If it is found necessary to separate the ewes from the lambs at one stroke, the same procedure as outlined for the commencement of the former system should be followed, but the ewes must be placed on very light diet. If on pasture it should be scanty and, for the first day or two they should only be allowed to feed for half the day. Their udders will need careful watching at this time and the most persistent milkers may have to be relieved once or twice. Some shepherds catch the heavier milkers and rub vinegar into the udder, claiming that it assists in the drying-up process.

The lambs should be kept on the best pasture obtainable after weaning, and here is where the grain fed lamb will have the advantage. If possible, feed the oat, bran and oil-meal mixture at least once a day. If oil cake is not obtainable a small amount of ground or whole flax may be substituted. See that the ewes are kept out of hearing distance, and be sure that the weaned lambs have free access to water at all times. If the lambs are penned at night they should receive some dry feed ere being turned out, as they are apt to pasture too heavily and suffer from bloat or scours. Lambs should be watched carefully and if necessary "tagged" or "clipped" out when the sexes are being separated. If the two classes are mixed the lambs that are destined for breeding should be separated from those intended for feeding purposes, as the latter will require the heavier feeding. The males and females should now be separated and placed in separate paddocks. After from three to four weeks' separation the ewe lambs may be allowed to mix with the ewe flock until the breeding season opens when they should again be separated.

#### CROSSING TO PRODUCE FEEDING STOCK.

As in the establishment of a breeding flock, the most profitable foundation in breeding fattening stock should consist of grade range ewes of as good quality and conformation as it is possible to obtain. These are hardy, prolific and long lived, and when bred to pure bred sires of good



LEICESTER LAMBS



PAIR YEARLING WETHERS AND PAIR EWE LAMBS OUT OF RANGE BRED GRADE  
MERINO EWES, PURCHASED AT MANITOBA SHEEP BREEDERS' ASSOCIATION  
SALE PORTAGE LA PRAIRIE, 1910.

Wethers lambed April, 1911, weighed in October (6 months) 115 and 140 pounds respectively, and as yearlings well up to 300 pounds each. Ewe lambs lambed April, 1912, weighed in June (3 months) 57 and 77 pounds respectively. All were got by a pure bred Leicester ram and were not picked individuals, being the only lambs the breeder kept.

mutton conformation, produce first class feeding stock. There is much diversity of opinion as to the value of the different breeds for crossing purposes, but in this work three things are essential:

1. Prepotency in the sire. This insures the production of a lamb crop which will tend to assume the characteristics of the male parent and in order to do this it is necessary to use a sire belonging to some long established breed and whose individual blood lines are of the very best.
2. The use of a sire belonging to a breed which is hardy, active and early maturing.
3. The use of a sire belonging to a breed which is noted for its feeding qualities.

As the grade range ewe is usually of indiscriminate breeding, it is not necessary to consider what breed or breeds are represented therein, but to select a sire possessing the above requisites.

Of those most suitable and within easy reach of the average Saskatchewan farmer, the Shropshire is possibly one of the best all round breeds to use for crossing purposes. They are prepotent, hardy, early maturing, active and good feeders, besides producing a fairly heavy crop of wool of good quality.

The Suffolk is another Down breed which has proven valuable in the west for crossing purposes. They are a larger and more upstanding sheep than the Shropshire, and possess all the requisite characteristics to a marked degree. They are well woolled and the fleece is about the same quality as the Shropshire.

The Oxford Down is one of the largest of the Down breeds, and is used with great success in crossing, once every two or three seasons. They are early maturing, but scarcely as active as some of the breeds mentioned, and are more favoured where luxuriant pastures are to be found than under ordinary conditions. The fleece is longer and more open than the Shropshire or Suffolk, and of fair quality.

The Hampshire Down is probably the heaviest of the Down breeds and is valuable for crossing on account of its size, and early maturing qualities, the fleece is closer and denser than the Oxford and of good quality. Crosses of the Hampshire breed will stand heavier feeding than almost any other class of sheep.

The Southdown is an extremely early maturing breed, producing a splendid mutton type of sheep, which gives general satisfaction, its only drawback being its rather small size.

For those who are in a position to give close attention to their flocks at lambing time, the Leicester and Lincoln are unsurpassed for crossing purposes. They are large bodied, strong backed sheep, extremely valuable in this work from a feeding standpoint, as they leave this stamp on their offspring, but it has been found that the lambs are scarcely as active and hardy as those of the Down breeds, and require more attention. Where lambing is carried on under unfavourable conditions, the mortality is greater.

The Cheviot is a breed which, though little seen in the west, has done yeoman service amongst the ranch flocks. It is extremely active, hardy and prepotent; produces an excellent mutton carcass and leaves its indelible imprint on every lamb. It is rather smaller than the Shropshire and scarcely as early maturing. The fleece is close and of good

quality. The lambs produced by Cheviot sires are more active and hardy immediately after birth than those of any other breed. The ewes thus require less attention at lambing, and are more easily handled by the beginner.

#### BREEDING.

The system to be followed in the breeding of sheep will be found under the directions for that operation. The time for same will largely depend upon the circumstances or accommodation and feed at the disposition of the sheep owner. Early lambs bring higher prices, but require greater care, and it will be as well for the beginner to start with a May lamb crop and work back earlier every year as he becomes conversant with the work. A few early lambs each season will help this empiric education greatly and when he feels that he can handle the flock, or a large portion of it, so as to lamb in February, let him arrange accordingly. In breeding with a view to feeding and fattening, it should be remembered that the infusion of new blood is extremely valuable. In maintaining a grade flock it will be found advisable to change the sire every two years, *and on no account permit him to serve his own lambs.* In obtaining a new sire, care should be taken that the blood lines are not too closely allied to those of the former flock leader. Whilst it is advisable for the man who is building up a grade flock to continue using the same breed of sire and thus build up the breeding and quality of his foundation stock, it is nevertheless true, that the introduction of another breed or an out-cross will generally improve the feeding qualities of the offspring. This should not be followed up, however, any more than for the one season. That is to say, that a man possessing a flock of grade Shropshire ewes, and having a sufficient number to enable him to dispose of a season's lamb crop, both male and female, for butcher purposes, will often find the introduction of a sire of another breed, say, Hampshire, Suffolk or Leicester, materially improve the feeding qualities of the product of the cross over the crop from a sire belonging to the same breed. Cross breeding in the older countries has produced some of the best feeding stock known as is instanced by the famous Leicester-Cheviot cross in the South of Scotland, but cross breeding even in grade flocks must be handled intelligently if it is to serve the purpose for which it is intended. In order to produce the best of stock for both fattening and breeding purposes the following should be borne in mind.

1. Never in-breed.
2. Always allow both males and females to mature ere using them for breeding purposes.
3. Always purchase the best sire it is possible for you to obtain, both as regards breeding and conformation.
4. Cull out the ewe flock every year and keep only those which produce healthy, hardy lambs.
5. In crossing never go beyond the first cross.

## FEEDS.

The usual feeds available on Saskatchewan farms, and suitable for sheep, consist of upland or prairie hay, (slough hay, especially if cut close to water, is not desirable), oat straw, wheat straw, oat sheaves, and in some cases alfalfa, clover hay, pea straw, millet and fodder corn. The grain feeds consist of oats, barley, ground flax, wheat screenings, bran and in some cases oil meal, speltz and mixed oats and peas.

Of the roughage mentioned, alfalfa and in fact clover of any kind is a first class fodder for both breeding and fattening stock. Its value as a food for pregnant ewes cannot be overestimated and every farmer who keeps sheep should have a patch of this feed. Oat sheaves should be fed in moderation to breeding stock, especially if the grain has nearly ripened, but in this stage they form a splendid fattening food. Of the grains, oats and bran, with sometimes the addition of a little ground flax or barley, are the only feeds that are advisable for breeding stock, especially during the winter season. Barley or speltz, wheat and wheat screenings, oats and peas, as well as whole oats, form first class fattening material. It should be borne in mind that a change of feed is always beneficial either with breeding or fattening stock, even though that change is only from oat to wheat straw. The more weeds there are in a straw pile, the more the sheep will relish the feed. Chaffy straw, finely cut up, is more readily cleaned up than the longer and more easily handled material. Unthreshed peas or pea straw are both excellent for sheep, but the former is an extremely rich diet and should not be fed in any great quantity. Flax straw, if on the green side, may be fed occasionally a change to fattening sheep, but should not be given to pregnant ewes. Millet is a valuable feed, but is extremely laxative, and the animals should be fed small quantities at first in order to let them become accustomed to it.

It is not usually advisable to feed animals of different ages in the same pen. Where possible lambs and young growing sheep should be penned together and the mature animals in another enclosure.

In feeding grains for fattening purposes, the age of the animal will make a difference in the character of grain fed. Lambs or growing animals require a greater amount of proteid food, such as afforded by oats and bran, in order to build up their body framework. Mature sheep will stand a larger proportion of starchy and oily foods, such as wheat screenings, barley, corn, etc. Barley is a good winter feed owing to its heating properties, but should not be fed alone. Mixed with oats or oats and bran, it is to be recommended for winter feeding. With breeding stock the proportion of barley should not exceed 25 per cent. of the mixture, whilst for fattening purposes it may run from fifty to seventy-five parts. Speltz should be fed in the same manner as barley. Screenings containing a large amount of pigweed should not be fed pregnant ewes. Grain should not be crushed or ground for fattening sheep, except in the case of young lambs. This is especially true of wheat which, when ground, forms a sticky paste in the animal's mouth. Wheat should never comprise more than 50 per cent. of any grain ration fed.

Frozen oats or frozen grain of any kind fed in the sheaf is apt to have laxative properties and should be fed sparingly at first.

Roots, mangels and carrots are an extremely valuable adjunct in fattening, whilst for the breeding flock some form of succulent feed is indis-

pensable. These may be fed halved, sliced or pulped, but preferably sliced. They serve as a tonic and keep the digestive system of the animal in a healthy state, besides counteracting any tendency to go off feed. In fattening, from four to eight pounds per head per day may be fed, according to the size of the animal. It has not been found profitable to feed roots without a complementary grain ration.

#### FEEDING AND FATTENING.

In speaking of the feeding and fattening of sheep, it is impossible with the limited space at our disposal, to go very deeply into this question. The matter is treated from the standpoint of the average Saskatchewan farmer, taking into consideration only those feeds which are found on the ordinary farm in this province. Sheep require above all things, cleanliness, and their troughs and racks should be thoroughly cleaned out after every meal. In order to make the best gains they must have salt in front of them at all times.

In feeding, the greatest satisfaction is obtained by feeding regularly, and, in fattening, three times a day rather than twice. Sheep will eat more on cold, frosty days than they will when the temperature is higher. A dry, keen winter atmosphere is favourable to sheep feeding and conducive to health and large gains, whilst damp, murky weather gives unfavourable results. *Sheep must have a dry place on which to lie down, and should be sheltered from wind and draughts.*

In fattening, it is always advisable to start slowly, as if a sheep once goes off its feed, it takes a long time to regain its normal appetite. Especially is this true with range stuff, which should be fed much more sparingly than farm bred stock. Sheep that have been on pasture take from eight to ten weeks to get on full feed. It has been found that the feeding of a light grade of screenings with a little grain and more coarse bulky material in the earlier period of fattening followed by a heavier, richer grain ration for finishing, gives the most economic gains.

There are six portions of the body of the sheep which show the stages of fattening,—these are the tail, head, middle of back, neck, flank, purse and breast. In feeding sheep there is no necessity for warm quarters, even with the cold winters of Western Canada.

A comparison in the feeding of several lots of sheep showed that those fed in an open shed with free access to an outside lot gave greater gains than those fed outside entirely, and also than those fed in a fairly warm stable, the difference in gain being from one-twenty-fifth to two-twenty-fifths of a pound per day in favour of the open shed system. The average gain per day for fattening sheep may be taken as one-third of a pound from birth to block or maturity.

As a general rule the self-feeder has not proven satisfactory in feeding sheep. The results of different experiments with differently planned feeders showing that a larger amount of grain was consumed and less gains made by the animals.

As the animals approach the finishing stage, the amount of exercise they are allowed to take should be gradually reduced, as this will increase the tendency to put on flesh.

*Selection of Feeders.*—The success or failure in fattening sheep depends very largely on the foundation stock with which the shepherd has to

work. Without going into selection in detail, the general points to be looked for in the feeder are approximately those sought for in the breeding sheep, for after all, our aim is to produce good feeders. Sheep purchased for fattening should be as low set and large framed as possible, should be healthy and vigorous, with deep wide chests, well sprung fore and back ribs, in fact, wide and deep throughout. In selecting feeders it is not necessary to lay such emphasis on smoothness as in purchasing breeding stock, as the former are generally in low condition and will fill out to a surprising degree if they possess the necessary heart girth and constitution which it is essential to obtain in buying feeders. In brief, in buying feeders, get deep hearted, low set stuff, and no great mistake will be made.

*Time of Fattening.*—In feeding either lambs or mature sheep the common time to start fattening is at the commencement of the cold weather in the fall. At this time the animals are not worried by undue warmth, flies or mosquitoes, and are beginning to put on flesh. At this time, also, the average farmer can turn them on the grain stubble which in an average year will contain abundance of feed to put these animals in good condition.

*Finishing.*—In feeding for the block it is essential that animals should be finished, that is to say, that they should have reached a stage when it would not be profitable for their owner to feed them longer. Finished stuff will always command top prices and the difference between the price obtained for the one and the other is usually equivalent to a profit or a loss to the farmer. Half finished stuff has passed the most expensive feeding stage, and the farmer who sells stock in this stage has simply paved the way for some one else to make money out of work and feed supplied by him.

#### FATTENING LAMBS.

In feeding sheep for the block, it should be borne in mind that all animals make the most economical, and thus the most profitable gains when young. Experiments made with lambs and two-year-old wethers showed that in the same period of time ten lambs gained twenty-four and two-fifths pounds apiece, whilst ten two-year-old wethers made seventeen and one-fifth pounds apiece. It is thus imperative that the lamb should receive no setback and should be kept gaining as much as possible when young. Lambs may be started on grain when from two and one-half to three weeks old, and from then on should have the opportunity of eating grain when they so desire. This may be done by the creep system already described. Lambs at four weeks of age will consume about one-eighth of a pound of grain per day, whilst at three months old they will consume from two-thirds to one pound. A mixture consisting, by volume, of forty parts sifted crushed oats, fifty parts of bran and ten parts ground flax makes a suitable ration for lambs. Starchy foods should be avoided in the early stages when the lambs are young. The best roughage obtainable should also be fed, such as alfalfa, well cured prairie hay or oat sheaves.

## METHOD OF FEEDING MATURE SHEEP.

The ordinary method of feeding mature sheep for fattening purposes is to feed twice a day at the commencement and increase this to three times as the animals become accustomed to the heavier diet.

Fattening sheep must be fed regularly and must have free access to water and salt. In the morning some roughage, such as prairie hay or alfalfa, together with the daily grain ration may be fed, and in the afternoon about four o'clock, roots and oat sheaves or some succulent fodder. Sheaf grain of any kind should be fed outside on the ground as the sheep will scratch amongst the straw and snow for grain that shells out and there will not be the long straw in the pen which makes it so difficult to clean. After the sheep have cleaned up their roots they will go to the outside fodder and then the less succulent fodder, such as prairie hay, oat or wheat straw, should be put in the racks, as they will then have all night to pick over it. As the feeding period proceeds, the feeding of roots may be advanced two or three hours and the increased grain ration divided into two feeds and fed morning and evening, whilst the roots and sheaf grain or other roughage will be fed at one or two o'clock. Fattening sheep should be kept as quiet as possible and should never be scared. Their capacity for feed should be carefully gauged by the shepherd and they should always be fed slightly less than the maximum amount they would take. The ability, or lack of it, to gauge the feeding value of his flock is what constitutes a good or bad feeder, and this is the secret of success in fattening any class of live stock.

In brief, the feeder should always:

1. Feed regularly, and at the same time every day.
2. Keep all racks and troughs well cleaned out.
3. See that the sheep have ample water and salt at all times.
4. Keep the feeding animals as quiet as possible.
5. Feed no more than they will clean up.
6. Vary the diet as much as possible.
7. Finish the fattening process ere marketing.

## KILLING AND DRESSING.

Whilst the average farmer in this province is more or less of an expert when it comes to killing hogs, sheep are apt to be an unknown quantity. Sheep that are butchered should always be either in good or gaining condition, as when this is the case the meat will be of better quality and more tender. Age, condition, feed fed and handling at killing time, all affect the quality of meat ere it reaches the hands of the housewife.

Overfat animals or animals which have been kept in high condition for some considerable time do not yield desirable mutton carcasses. The aim of the butcher is to procure a carcass in which the fat and the lean is found mixed or "marbled" in such a way that there is no great depth of the one or the other alone. In order to produce the best quality of meat, a young rapidly fattened animal is the best. Generally speaking, age induces toughness, although an old animal rapidly fattened will dress a better quality carcass than a young animal in thin or losing condition.

*Preparation for Slaughter.*—Sheep should always be starved for at least twenty-four hours before being killed. They should be allowed all the water they will drink, but no other nourishment. Starvation for this period of time is necessary in order to produce a well-drained carcass that will also keep well. The carcass of an animal killed when the stomach is full will decompose more rapidly and does not generally possess as good a flavour. Animals about to be killed should be kept as quiet as possible and any exercise or excitement just previous to killing avoided. Animals which have become overheated, tired or excited just prior to slaughter, should be left until they cool off. Spencer states that "A thirty-six hour fast, plenty of water, and careful handling are all important in securing meat in the best condition, either for use or curing purposes."

The appliances necessary for slaughtering should consist of a thin bladed, pointed and extremely sharp sticking knife, a flaying or skinning knife, a place to hang the carcass, a gambrel stick for each animal, and some wooden skewers.

The following is taken from the Dominion Bulletin on the subject:

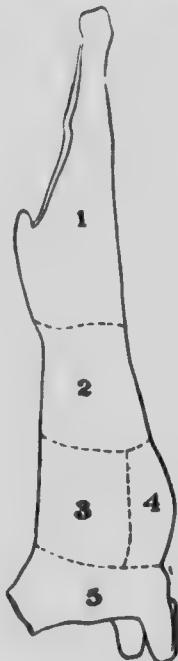
*Avoiding the Woolly Flavour.*—Much of the sheepy flavour of mutton comes from the generation of gases in the stomach after the sheep is killed. For this reason, in addition to proper fasting, it should be dressed as rapidly as possible. A platform six or eight inches high is convenient to work on, and aids in keeping the carcass clean. A clean dry place is necessary for neat work. Water or blood on the wool makes it very difficult to dress the animal nicely.

If the sheep is an old one, it may be stunned before bleeding. If a young one, the same purpose is served by dislocating the neck after cutting the throat. This is accomplished by putting one hand on the top of the head, and the other hand under the chin, giving a short twist upward. Lay the sheep on its side on the platform, with its head hanging over the end. Grasp the chin in the left hand and stick a knife through the neck just back of the jaw. The cutting edge of the knife should be turned toward the spinal column and the flesh cut to the bone. In this way it is possible to avoid cutting the windpipe.

*Skinning and Dressing.*—In skinning, split the skin up the back of the front legs from the dew claws to a little above the knees. Open the skin over the windpipe from brisket to chin, starting it slightly on the sides of the neck. Split the skin over the back of the hind legs to the middle line and skin the buttock. The skin should also be raised over the cod and flanks. Skin around the hocks and down to the hoofs, cutting off the hind feet at the fetlock joints. Run the knife between the cords and bone on the back of the shins, and tie the legs together just above the hock until after the carcass is hung up. Hang the sheep up by the hind legs and split the skin along the under middle line. Start at the brisket to "fist off" the skin. This is done by grasping the edge of the pelt firmly in one hand, pulling it up tightly and working the other with fist closed between the pelt and the body. The "fisting off" should be downward over the forequarters and upward and backward over the hindquarters and legs. It is unwise to pull down on the skin over the hind legs, as the membrane covering the flesh is sure to be ruptured and an unsightly appearance given to the carcass. The wool should always be held away

from the body rather than towards it, in order to preserve the covering of the meat. When the pelt has been loosened over the sides and back it should be stripped down over the neck and cut off close to the ears. The head may then be removed without being skinned by cutting through the neck joint.

Begin removing the entrails by cutting around the rectum and allowing it to drop down inside. Do not split the pelvis. Open down the belly line from the cod to the breast bone and take out the paunch and intestines, leaving the liver attached to the carcass. If the mutton is for home use split the breast bone and remove the heart, lungs and diaphragm together. Reach up into the pelvis and pull out the bladder. Wipe all the blood and dirt from the carcass with a coarse cloth wrung nearly dry from hot water. Double up the front legs and slip the little cord, found by cutting into the fleshy part of the forearm, over the anklepoints.



*Cooling and Cutting.*—It is very important that the carcass be cooled soon after slaughtering, and yet that it be not allowed to freeze. The most desirable temperature for cooling meat is 34 degrees to 40 degrees, and an approach to these temperatures will give good results.

In the summer season it is best to dress the animal in the evening, leaving the carcass in the open air overnight and carrying it to a cool, dark cellar before the flies are out in the morning. Very often a cool room in the barn can be used for the purpose if made dark. There should be no fresh paint, tar, kerosene or like substance around, however, as freshly killed meat absorbs such flavours readily. Cooling is often hastened by splitting the carcass into halves or even into smaller pieces. It is best, however, not to divide the carcass until the meat is firmly set, unless absolutely necessary to prevent it from souring. For the best results in cooling meat, the air should be dry as well as cool, and free circulation aids greatly in carrying away foul odours and mould spores. It is also important that flies and insects be kept away from the meat.

To do neat work in cutting up meat, one should have a short curved knife (a skinning knife is as good as any), a meat saw and an eight-inch cleaver. An axe may take the place of the cleaver, but is not nearly so useful. If a cross section of a large log can be had it will answer for a block. A table, however, can be used in most cases.

In cutting, one should always cut across the grain of the meat. Following this principle will result in uniform pieces and the joints will be more easily carved after cooking. Cut to the bone with the knife, and use a saw rather than an axe for cutting the bone.

First split the carcass into halves, then cut off the flank and breast. Cut off the leg at the top of the round just touching the hip joint. Remove the front shank at the elbow joint. When a "saddle of mutton" is wanted, one must deviate from this method of cutting and cut the saddle in one piece before the carcass is

split into halves. The leg of mutton is sometimes cut into steak, but it is usually roasted whole or boiled. The loin may be used for chops, the slices being cut parallel to the ribs, or it may be roasted if desired. The chops should be cut "one rib" thick. If used as an oven roast, joints in the backbone should be cracked with a cleaver to admit of easy carving at the table. The rack is used in the same way as the loin. The joints in the back of the shoulder should be cracked and the ribs broken across the middle on the inside, when it may be used as an oven roast from a young mutton, or as a boiling piece if from an old one. The breast and flank, when trimmed, are used for stews; the neck and shank for soup stock.

*Corning Mutton.*—Mutton may be successfully corned by a number of methods. Mutton may be kept sweet several weeks by simply rubbing well with dry salt and closely covering. The pieces should be turned whenever the vessel is uncovered. Following are three reliable receipts for corning mutton by the use of pickle:

1. Make a brine strong enough to carry a potato about half out. To half a barrel of brine add one half pound of saltpetre, if pure, less is needed. In ten to twelve days the curing will be complete. When cured it may be kept in a clean, new weak brine.

2. To every four gallons of water allow two pounds of brown sugar and six pounds of salt; boil about twenty minutes, taking off the scum; the next day pour it on the meat packed in the pickling tub; pour off the brine, boil and skim every two months, adding three ounces brown cane sugar and half a pound common salt. Sprinkle the meat with salt before turning the pickle over it. Let it entirely cover the meat; add four ounces saltpetre.

3. Prepare a brine by adding to each gallon of cold water one quart of rock salt, one ounce of saltpetr e and four ounces of brown sugar, as long as the salt remains undissolved the meat will be sweet. If scum rises, scald the liquid and skim well, adding more salt, saltpetre and sugar. Each piece of mutton should be well rubbed with salt before being placed in the brine. If the weather is hot the meat should be gashed to the bone and salt rubbed in. The meat should be kept immersed in the pickle by means of a weight. A canvas lid kept on the vessel is commendable, as it admits air and excludes flies.

*Spiced Mutton Hams.*—Mutton hams are easily cured. As mutton takes salt very readily care must be taken not to get the hams over-salt. Select the "leg of mutton" and cut off the leg at the hock. Some prefer to remove the entire bone. The curing treatment is as follows:

Sprinkle and rub in a teaspoonful of saltpetre; rub on two teaspoonfuls equal parts ground allspice and cloves; then rub on brown sugar, about a teacup, then apply salt. Turn and rub with application every second day for three or four weeks. Meat thus cured is delicious boiled or sliced and fried.

#### COMMON AILMENTS AND DISEASES.

Western Canada is most fortunately free from the majority of diseases which are so destructive to sheep, and this immunity is worth more to the agricultural public than can be estimated. Just because this is the case at present, however, there is no need for the sheep farmer to think that

such a thing cannot happen. Diseases which, if looked after in time, would prove only trifling matters may devastate a flock if neglected, and the careful shepherd will do well to keep a sharp look-out for scab, foot-rot, stomach-worm or any other of the deadly enemies of sheep, as the fact that they are not common here at present is no guarantee that they will not become so. There is no class of farm animal that is so hard to deal with as a sick sheep and none less susceptible to cure. Prevention of disease is the only way to maintain a healthy flock. There are a number of diseases of sheep which, though prevalent in the United States are not yet found in Saskatchewan, and on this account these will not be dealt with.

If any disease or internal parasite which is not readily recognisable, attacks sheep, the owner should at once get in touch with a qualified veterinarian or write, describing symptoms to the Dominion Health of Animals Branch, or the Department of Agriculture, both at Regina.

In dealing with any disease the following precautions should be taken:

1. Isolate the sick animal.
2. Stop the grain and root ration immediately until the cause is definitely ascertained.
3. Do not handle a sick animal and then go back and work among the flock without carefully disinfecting hands, etc.

The commoner diseases may be divided under three heads—External Parasitic, Internal Parasitic and Digestive. Besides these, there are a number of common ailments which the beginner should know how to deal with.

*External Parasites.*—Include ticks, lice and scab and may all be cured by dipping as described under that head. Ticks or keds are well known and easily recognised though it is not generally known that what is commonly called the tick, is not in reality a tick at all. The true tick is known as the wood-tick, and is larger and of an entirely different shape. The true tick has a large, grayish body with a minute head, and eight legs whilst the ked or so-called tick has a large purselike grayish body with a brownish red head and thorax, and six legs. The sheep louse is an extremely minute, red-headed parasite about one-twenty-fifth of an inch long. It is extremely irritating to sheep and seems worst on those animals which are in low condition. Its presence is indicated by extreme restlessness and irritation and the infested animal may be seen biting at the wool, so much so that in many cases large patches, entirely bare of fleece, result. In purchasing range sheep it is as well to avoid lousy flocks, if possible. All three of these parasites are destroyed by thorough dipping, as outlined under that head. Infested sheep will never do well and, if neglected, may become so emaciated as to die from the effects of these parasites. All farm flocks should be well dipped at least once a year, and preferably twice.

*Scab.*—Caused by a minute parasite hardly visible to the naked eye. This disease is extremely contagious and is greatly to be dreaded. It generally shows itself along the sides or on the back of the head and neck, extending from there in the advanced stages to the back and rump. The fleece has a rough broken look and the animals are restless, biting and scratching themselves and showing general uneasiness. The characteristic appearance of this disease is primarily shown in the form of whitish

or yellowish pimples which increase in number and, as the disease progresses, exude a glutinous fluid which dries and forms a scab on the skin under which the parasites live and multiply. Infected flocks should be strictly isolated. Sheds and pens should be thoroughly cleanse and disinfected and these, together with infected pastures, should be kept unoccupied as long as possible, as they will retain infection for several months.

The remedy consists in dipping the sheep twice, with an interval of ten days between the two operations, as the first dipping will not kill the eggs. The dip should be much stronger than that used for ordinary parasites, and there are generally special directions for this disease on can or package which should be followed.

*Internal Parasites.*—These are comparatively unknown in the west and include Parasitic Bronchitis, Liver Fluke, Noseworm, Sturdy or Gid, Tapeworm, Roundworm and Stomachworm. Of these the Noseworm is perhaps the only one with which the farmer will be much concerned. The symptoms and treatment of the others may be obtained from any standard work on sheep, such as Wing's "Sheep Farming in America," Harper's "Manual of Farm Animals," Craig's "Sheep Farming," or an instructive booklet issued by the Wm. Cooper & Nephews Co., Chicago.

*The Noseworm* is in reality the larvæ of the gad fly (*Oestrus ovis*) which lays its eggs on the edge of the sheep's nostrils, whence the larvæ find their way into the nasal passages. The fly appears in June and July. The sheep are greatly excited when attacked and huddle together in some dry dusty place, with their noses to the ground. There is generally a profuse discharge from the affected nostril and frequent sneezing. Sheep will not feed well when infected with this parasite. The treatment is largely preventive. A darkened shed to lie in during the hottest period of the day, or smearing the noses with a mixture of tar and fish oil or tar alone are all recommended, as also is the spreading of slaked lime beside the feeding troughs, and in the sheep sheds.

*Digestive Troubles.*—It is a well-known fact amongst shepherds that a large number of the ailments and diseases which affect sheep are due to, or aggravated by, heavy feeding or the feeding of unsuitable material. For this reason it is advisable to feed a sick animal very lightly.

*Bloat or Hoven* is probably the most common of this class and is caused by the rapid fermentation in the stomach of very succulent green food, especially when that food has been greedily eaten after being wet by dew, rain or frost. This fermentation produces gas in such quantities as to distend greatly the first stomach causing it to press up on the diaphragm, and thus interfere with the breathing of the animal. In the milder cases, or in the earlier stages, a drench of from three to four tablespoonfuls of linseed oil, together with a teaspoonful of ammonia water or turpentine may be administered. Cold water poured upon the distended paunch will also help. Some shepherds tie a piece of wood about the thickness of a fork handle in between the jaws. In severe cases, however, it is sometimes necessary to release the gas by making an incision in the paunch. The safest method of doing this is by means of a trocar and canula, but in the absence of these, a small bladed knife may be used. The incision should be made on the left side in the centre

of the triangle made by the short rib and the point of the hip bone. It is usually as well to remove the wool at the point of incision. If a knife is used the blade should be turned sideways after insertion to permit the free exit of gas. The wound should be carefully disinfected after the operation, and smeared with tar to repel flies.

*Constipation.*—Sometimes when animals are changed from succulent to dry feed, or through the winter months, they may be troubled by excessive constipation. This may be remedied by drenching the animal with from four to six ounces of Epsom salts, dissolved in cold water and to which a dessert-spoonful of common salt has been added. In severe cases the affected animal may be perceived stretching itself, spreading the feet apart, raising the head, down-curving the back and extending the abdomen. From this habit the ailment gets the name of "stretches." In stubborn cases, an injection of soap and warm water will nearly always effect a cure.

*Diarrhoea.*—This disease is seldom dangerous in mature animals, and may generally be prevented by regulation of the quantity and quality of food fed, and by an ever-present supply of salt. In lambs, the cause is generally attributable to overfeeding of the ewe. Lambs suffering from scours should receive the following dose daily until recovered: One teaspoonful of linseed oil and five drops of essence of ginger.

*General Diseases.*—Garget, or suppurative inflammation of the udder, is a bad disease to get into a flock. The udder becomes swollen and hard, and as the disease advances, discolours rapidly, giving it a bruised appearance. The teats also become hard. The milk usually becomes watery or mixed with blood and later changes to a sort ofropy pus. The disease is largely due to overfeeding and is developed either by injury or a sudden chill; in fact, any cause which will produce congestion and inflammation or stimulate bacterial growth in the udder. Affected animals should be isolated at once and care should be taken to avoid infection of other ewes. Milk the udder frequently and bathe with hot water or poultice with hot bran. The udder should be kneaded after every bathing and as much fluid milked out as possible. The application of an ointment made of gum camphor and belladonna and lard is also beneficial. To make this, melt two tablespoonfuls of gum camphor and mix in half a pint of fresh melted lard, together with one ounce of fluid extract of belladonna. The lambs must be separated from the ewe, who should receive no grain under any consideration. Ewes that are heavily fed after lambing seem especially prone to this disease.

*Goitre.*—Goitre is an enlargement of the thyroid gland and consists of a large, soft swelling of the throat at the junction of the head and neck. Where this disease attacks lambs before birth, as it frequently does in certain localities and under certain conditions, it sometimes causes great mortality. The swelling presses on the windpipe and either prevents breathing altogether, or so interferes with it as to cause death. If breathing is once well started and the animal is active, it will generally outgrow this as it matures. The cause is variously ascribed to the presence in quantity of certain elements or compounds such as magnesium or lime salts in the water; overfeeding, feeding of certain foods, etc. There is no doubt that this disease will appear persistently in certain localities and on certain farms, but observations in this province seem to point to the fact

that where ewes which have been accustomed to scanty feed are put on rich diet, there is a greater tendency towards goitre. Lack of exercise and the feeding of too large a proportion of oily or starchy foods have also been given as the cause. One farmer ascribed it to the feeding of screenings containing a large quantity of pigweed. Whatever the cause, there is no doubt that range ewes which have been placed on farms, fed heavily and given little exercise, have a larger percentage of goitred lambs than any other class of sheep.

Little can be done except to assist the newly born lamb to breathe by cleansing mouth and nostrils and blowing down the latter to start respiration. Where lambs live over two days or so there is little danger of death from this cause. If the swelling remains large, the place should be clipped and painted three or four times a week with tincture of iodine.

*Troubles of Urinary Organs.*—In fattening wethers or with rams in high condition, we sometimes find that the urethra or urinary canal becomes choked with a sedimentary deposit. The end of this canal, consisting of the peculiar vermiciform appendage of the male sheep, which has an extremely small orifice, offers easy obstruction to the passage of urine. The symptoms are those of retention of urine and an examination is then necessary. The parts should be fomented with hot water and a dose consisting of one dr. in of carbonate of potash dissolved in water should be given three times a day. If the sediment cannot be passed, it will be necessary to remove it by operation. In wethers the vermiciform appendage may be entirely removed. In rams this should only be done as a last resort, as this part of the anatomy is supposedly necessary if the animal is to be used for breeding purposes.

*Foot Rot.*—This is very rare in the west, and is generally a result of neglect on the part of the shepherd. If the animals are not on pasture hard enough to wear their feet down, they should be trimmed frequently enough to keep them in order. If not, the horn grows long on the outer edges and gradually breaks and bends under the sole of the foot. Dirt and grit find a lodgment, and sore feet first, and then foot-rot, is the result. Keep the feet trimmed level and if an animal gets sore apply butter of antimony (antimony trichloride) or a mixture of powdered bluestone and calomel. In heavy clay land, sheep sometimes become sore on account of the clay gathering in the cleft of the foot, and drying and hardening there. This should be watched and is easily remedied. If a large number are sore, it may be advisable to spread slaked lime where the animals will have to walk through it. A narrow passage to and from the shed will answer well for this purpose.

Such ailments as choking, running at the nose, lameness, wounds, etc., are largely due to mechanical causes already dealt with, and will need no further reference.

*Drenching Sheep.*—In administering fluid medicines to sheep, the following procedure is advisable. Pour the medicine into a long, slender-necked bottle by means of a funnel, which, at a pinch, may be made of several ply of stiff paper. Back the sheep into a corner of the shed or pen. Straddle it and, placing the left hand under the lower jaw, raise the mouth just enough to let the medicine run down the throat. Insert the neck of the bottle at one side of the mouth and pour gradually, a little at a time, never pouring in more than the animal can swallow easily.

## PASTURE, ROOTS AND FODDER CROP.

As stated elsewhere in this bulletin, suitable grass pasture is essential to the highest success in sheep husbandry, and the addition of roots and fodder plants to the ration throughout the winter season is of material assistance.

*Permanent Pasture.*—For a permanent pasture, brome grass or Kentucky blue grass, with brome, in the proportion of one pound of blue grass to three pounds of brome, will give excellent results. Brome is our only cultivated grass having a growing period extending over the entire summer. Other grasses make a good growth in the spring, but once dry weather sets in they tend to produce seed, and after that will furnish little pasture until the following spring. Brome grass, however, comes up afresh after every rain. When it is mixed with a small amount of Kentucky blue grass, a dense growth particularly suited for sheep is produced. Ten pounds of brome or between eight and ten pounds of the mixture should be sown on an acre. The best results are obtained when the grass seed is sown about May 24, without a nurse crop on land which has been carefully summerfallowed the previous year. The seed may be sown with a wheelbarrow seeder, or mixed with a quantity of crushed barley or oats to give it bulk and sown with an ordinary grain drill. The grass should be mown once or twice during the growing season to keep down weeds, and not used for either hay or pasture until the following year. If it is decided to seed down with a nurse crop, barley will be found very satisfactory as it uses less moisture than other cereals and, ripening early, it can be harvested, and the grass will have a chance to form a good mat before winter sets in.

Alfalfa makes first class pasture and as a winter forage it is unexcelled. This crop is now being successfully grown in almost every part of the province and notwithstanding the fact that the seed is very high priced, every sheep owner should include it as one of his crops. Owing to the expense of seeding, it should only be seeded in places where it can be left in possession of the soil for six or eight years. Some northern grown strain, such as Grimm or Montana, should be selected. Sow early in May on land which has been well fallowed the previous year, putting on about ten pounds of seed per acre; use no nurse crop.

If alfalfa has not been grown on the land previously, a top dressing of soil from an old alfalfa field should be scattered over the land to introduce the alfalfa bacteria, the presence of which is essential to success with this crop. About one hundred pounds of soil per acre will be sufficient. It should be taken directly from the old field to the new, scattered over the land and harrowed in at once. This should be done immediately after the alfalfa is sown. During the first summer use the mower to keep down weeds, but do not cut or pasture after August 15, so that this will be a good covering on the ground to hold snow and protect the roots during the winter. After the first year it may be used for either hay or pasture, but should never be pastured late in the fall. When intended for hay, the first cutting should be made shortly after the first bloom appears, and the second cutting should not be made later than August 10. If the growing of alfalfa is contemplated, send to the College of Agriculture, Saskatoon, or to the Department of Agriculture, Regina, for a copy of the Alfalfa Bulletin.

In feeding alfalfa hay, it is advisable to give the sheep some other roughage such as oat straw, besides the alfalfa, for if fed alone it is more fattening than is desirable, particularly for breeding ewes.

*Rape.*—In addition to grass, some succulent pasture such as rape is required, particularly if the sheep are feeding on the native prairie grasses, as these become very short and dry by the latter part of August. A few acres seeded to this crop will yield an immense amount of feed and will prove of great benefit to the flock. Rape may be sown either broadcast or in drills, but should be put on strong, clean land. The best results will be obtainable, when labour is available for inter-tillage, if the rape is sown in drills about thirty inches apart and frequent cultivation given during the early growing period. Two pounds of seed per acre is sufficient if sown in drills, but three pounds will be required if seeded broadcast. About May 15. is the most opportune time to sow and Dwarf Essex is one of the best varieties. Rape should be fit to use as pasture in two months from seeding.

*Oats and Peas.*—A mixture of two-thirds pens and one-third oats is also often used for this purpose. The sheep should be turned into this when the crop is from eight to ten inches high. With all soft pastures there is danger of bloating if the sheep have access to it while very hungry, or when it is wet with dew or rain.

*Roots.*—Land summerfallowed the previous year and top-dressed with a heavy coating of well rotted manure should be provided for root crops. Turnips, mangels and sugar beets may be grown on the level, or the land may be ridged up and the seed sown on the ridges. Ridging entails a little more work, but the crop is more easily thinned out and kept clean. Harvesting is also easier. Seeding should be done about the end of May. Two pounds per acre of turnip seed will be required, while for sugar beets and mangels from five to seven pounds will be needed. The following varieties have proven themselves particularly adapted to Saskatchewan conditions.

Turnips: Perfection Swede, Imperial Purple Top, Hall's Westbury.

Sugar beets: Vilmorin's Improved, French Very Rich.

Mangels: Yellow Globe, Half Sugar White, Giant Yellow Intermediate.

Frequent cultivation during the growing season is required to keep down weeds and to maintain a dust mulch to prevent evaporation.

When the young plants are about four inches high they should be thinned out with a hoe, so that each plant left will have six or eight inches space in the row.

Various methods are employed to harvest the root crop. When slight damage to the roots is not considered important, a common practice is to remove the tops with a hoe and then plough down the rows, throwing the earth away from the roots. Next, an ordinary spike tooth or diamond harrow may be inverted and the roots harrowed loose, when they can be gathered into wagons and drawn to the root cellar.

*Carrots.*—Carrots require similar soil and cultivation to other roots, but do best when sown on the level. The rows may be closer together than turnips or mangels, and in thinning, only three or four inches need be allowed for each plant.

The following varieties have been tried out in the west and will give good results:

Ontario Champion, Improved Short White, Half Long Chantenay.

#### ROOT HOUSE.

As previously stated, the feeding of roots, turnips, sugar beets, mangels or carrots, to breeding ewes for a short time previous to, and following lambing, is highly advisable, and beneficial results attend the use of roots for ordinary feeding and fattening purposes. Where roots are to be used for these purposes, it is essential that the farmer have a suitable root house. The writer is of the opinion that under average *prairie* conditions this can best be provided by constructing an underground root cellar beneath the sheep barn or other conveniently situated building.

In most cases it is advisable, in order to prevent freezing, that the walls of the cellar be two or three feet inside the foundation. When possible, the floor and walls of the cellar should be built of concrete and care should always be taken to carry the walls up tight to the ceiling of the cellar, and otherwise to observe every precaution to exclude frost. This space between cellar walls and the outer foundation should be completely filled up with earth.

For convenience in filling the cellar, it is advisable to have a door or chute opening outside the pen, and for feeding, a trap door with stairs leading down into the cellar should be located in the feed passage. The outside opening should be provided with close fitting double doors. After filling the cellar these should be shut and the space between them stuffed with straw or some other non-conducting substance.

Provision should be made to ensure free circulation of air among the stored roots. This can be accomplished by putting in a false floor and walls of slats, so as to leave an air space all around the roots. The floor should be made of 2 x 4 material, laid on the flat, 1½ inches apart, and nailed on 2 x 4 set on edge, the latter resting on the cement floor. For the false walls 2 x 4's should be set in the concrete when the walls are being built, so that they will sit out two or three inches from the wall. On these narrow inch lumber can be nailed, an inch or so of space being left between the boards. The false floor should be made in sections so that when the cellar is empty the sections can be raised and the floor properly cleansed. Ventilating shafts leading up through the roof, and provided with dampers to regulate the size of the opening, should be installed.

A root cellar fifteen feet wide, twenty-five feet long, and eight feet deep should hold upwards of two thousand bushels of roots.

#### PORTRABLE HURDLES.

With regard to portable hurdles the following extract from the *Nor' West Farmer* of February 5, 1913, gives all information necessary:

"To get the greatest amount of feed from small areas of alfalfa, clover, rape, peas, etc., it is necessary to divide them, keeping stock confined to a portion of the field while the balance continues to grow. In such cases a portable fence of some kind is both handy and valuable. Lumber in many sections is high-priced, yet to obtain a fence that will be

strong, easily moved and lasting, the two styles published herewith seem to fill the bill as well as any.

"Figure 1 shows one panel of a very convenient fence. It is light in weight, yet strong enough to hold hogs of any age. This fence may be made of any well seasoned lumber, but fir, pine or spruce one inch thick is recommended. The uprights for the panel are two feet, ten inches high, which represents the exact height of the fence. Beginning at the bottom, a board six inches wide and twelve feet long is nailed to the uprights three inches from the ground. The same length of board three inches wide, is then nailed to the top to hold the uprights in place. The two centre boards are each twelve feet long, the lower one being five inches wide and the upper one four inches wide. These two boards are nailed about eight inches to one side, and as seen in the illustration, a piece of board twenty-six and a half inches is nailed to the extended ends. The braces meeting in the centre of the panel are six feet long and four inches wide. The uprights on each end must be four inches apart.

"The panels are attached to each other in snake fence fashion, and the fence may be extended to any length and in any direction. The twenty-six and a half inch piece on one panel locks into the twenty-two inch opening in the adjoining panel, and forms a splice which cannot be unlocked by the hogs themselves, and requires some engineering on the part of the man who attempts to take this fence apart. The fitting together of these panels is very simple when it has once been done.

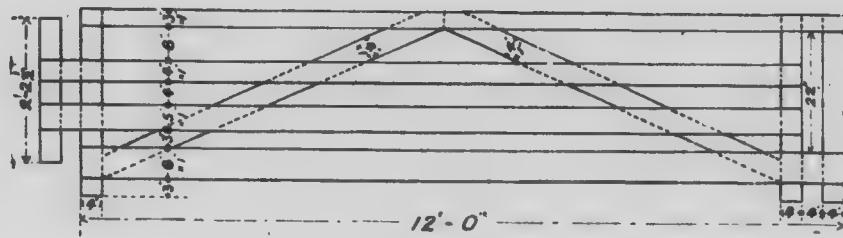
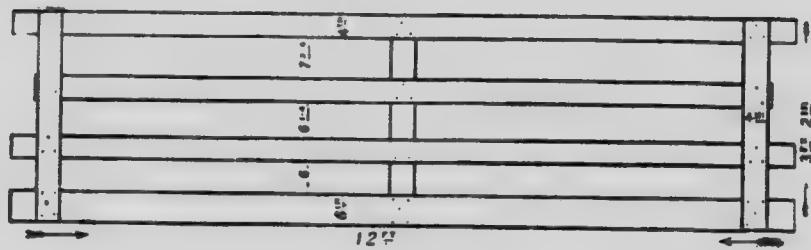
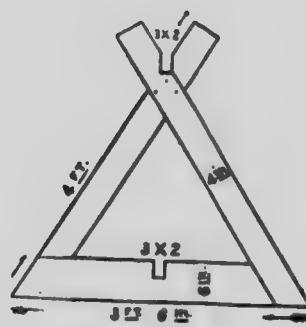
"The bill of material for a single panel, all one inch lumber as follows:

- 1 piece 6 inches wide, 12 feet long.
- 1 piece 5 inches wide, 12 feet long.
- 1 piece 4 inches wide, 12 feet long.
- 3 pieces 4 inches wide, 2 feet, 10 inches long.
- 2 pieces 4 inches wide, 6 feet long.
- 1 piece 4 inches wide, 2 feet,  $2\frac{1}{2}$  inches long.
- 1 piece 3 inches wide, 12 feet long.

"This makes a total of twenty-five square feet of lumber in each panel. To fence an acre it will require seventy panels, twelve feet long, making a total of 1,750 square feet of lumber, providing the fence ran straight. The fact that the fence is crooked will make it necessary to have four extra panels, which makes a total of 1,850 square feet of lumber to fence an acre. This panel may also be made sixteen feet long and three feet or three feet, six inches high, and this size gives good satisfaction when used in connection with sheep. These panels are also very useful in dividing the sheep pen into separate pens.

"In calculating the cost of fencing an acre the price of lumber will be according to the location of the buyer.

"Figure 2 shows another form of portable fence for hogs or sheep which has the advantage of being easily put together and which is built in a straight line. It requires the additional triangle section which serves as the connection between each section of the fence. The dimensions of this triangle are given in the illustration. The figures  $3 \times 2$  denote that the grooves immediately below them are three inches deep and two inches wide, which allows the two adjoining panels to fit in the one groove. The panel proper is twelve feet long. With the exception of the bottom board, which is six inches wide, the balance of the lumber may be four inches wide.



The second top board is four inches short on each end to allow the triangle to fit on the end of the panel. According to the illustration this fence will stand three inches from the ground. This fence requires wiring, hooking or nailing at the corners. The bill for material for one panel of this fence is as follows:

- 1 piece 6 inches wide, 12 feet long.
- 2 pieces 4 inches wide, 12 feet long.
- 1 piece 4 inches wide, 11 feet, 4 inches long.
- 3 pieces 4 inches wide, 3 feet, 2 inches long.
- 2 pieces 4 inches wide, 4 feet long.
- 1 piece 6 inches wide, 3 feet, 6 inches long.

"This makes a total of twenty-six square feet per panel, and as it requires seventy panels to fence an acre, a total of 1,820 square feet of lumber would be required."

#### HOUSING.

In Saskatchewan, no elaborate building is necessary for sheep, provided the feet and fleece are kept dry. An inexpensive shed, 40 x 20 feet, will accommodate fifty breeding ewes and may be used as winter quarters, lambing pen and summer shed. The shed should be built on the highest, driest spot available and need not be of heavy construction—2 x 4 inch studding with two feet centres and eight feet long, will give ample height. For at least six feet high on the walls, half inch lumber should be applied and then tar or good building paper and shiplap outside will make a first class sheep shed. It can be built with or without a small loft, but is warmer in winter and cooler in summer with such an addition, besides being more convenient for feeding purposes. If a full sized loft is planned, posts consisting of built-up 4 x 6 may be placed down the centre to support the joists, and one ventilation shaft two feet square should be put through to the ridge pole for every 400 square feet of shed. The illustration shows an inexpensive sheep shed without a loft. The door must be wide in order to prevent crowding. This one is twelve feet wide and is situated in the south-east corner; this leaves the west end for lambing purposes without any direct draught. A sliding half door twelve feet long and three feet high is provided. This runs with iron U loops on a circular or square cut iron rod which joints at the west door post, and when the door is open folds back and lies along the top of the half door. When it is desirable to shut the door the rod is dropped into an iron hook made to receive it on the west door post and the door is then slid along shut. The joint hinge may simply consist of a large wood screw, worked through a hole in the rod and not screwed quite home. The shed may also be built without the half door, but the latter is a decided advantage in cold, stormy weather and prevents floor draughts. Besides this, it is handy to keep the sheep out when the racks and troughs are being filled. The top half of the door is *always open*. Three windows, 4 x 3 feet, are provided on the south side and about three feet from the ground, just so that the half door slides under the east window. These windows, are hinged at the top so that they can be opened and fixed back with a hook and staple when cleaning or feeding, or on warm days. Two of the same kind are provided for at each end and three on the north side. As the north side is the side at which the feed will be put into a shed without a loft, it is advisable to have



PLAN OF AN INEXPENSIVE "SHEEP SHED"

a movable partition between two of the windows so as to give easy access to the feed rack which lies below. The inside of the shed is very simple. No floor is needed, a hard packed earthen floor is best; upon this should always be kept an abundance of bedding to keep the sheep dry and warm and break draughts.

It is not generally advisable to combine the grain trough and hay rack as the refuse from the hay is continually filtering down into the trough and also, with a properly built rack a trough interferes with the sheep feeding. It may be economy in small buildings to combine both and for this reason a design of a combination rack is given. The rack should be so constructed that the sheep can get their heads between the slats without danger of being caught and held there. For this reason the slats should be about eight inches apart. With racks in which the slats are close together, the sheep have to pull the feed out and they consequently trample and waste a lot in this way. In the proposed shed the rack is built along the north and west walls without any slope to the slats so that there is no chance of the fleece becoming filled with chaff or dirt as happens with overhanging racks. The rack is two feet from the wall and the bottom of the slats is six inches from the ground so that the refuse may be raked into the pen for bedding after every meal. (See Fig. 3.) The slats are six inches wide and nailed to 2 x 4 inch pieces which in turn are spiked to posts driven in the ground, or just fixed in the ground and run clear up to the roof. The grain troughs should be square bottomed and wide enough so that a shovel may be run along the bottom board to clean the trough out. These should be placed about a foot from the ground, and about eighteen inches above that again a 2 x 4 is fastened over the middle of the trough to prevent sheep getting into it. The grain troughs are placed along the south and east walls. If it is desired to divide the shed into pens this may be done either by means of portable feed racks or by portable hurdles as described elsewhere.

For lambing the west end of the shed may be separated off into smaller pens. There should be at least two square feet of window space to every hundred square feet of floor space, and twice that amount is better still. The windows on the south side should be as low and large as possible to admit abundance of sunlight which is of the greatest value in winter.

As the majority of sheep sheds in this province will maintain a temperature at or below freezing in the middle of the winter the water trough is better loose so that it may be emptied after every watering. Sheep require fresh water at least once every day even in the coldest weather, especially if on dry feed. A serviceable trough is made by taking a large barrel and cutting about one foot off one end. On the bottom of the shallow circular trough thus made four grooved blocks are nailed in a circle. A small vinegar barrel is then filled with water and the larger trough placed over the top. With the grooved blocks fitting on to the top of the vinegar barrel to keep it from sitting solidly down, the two are then inverted and a self feeding drinking trough is the result. The vinegar barrel should be small enough so that there is from five to six inches between the edge of the trough and the side of the barrel for the sheep to drink from. A square box and a full sized barrel may also be used but the inversion is more difficult.

Combined rock and grain trough

Fig. 1

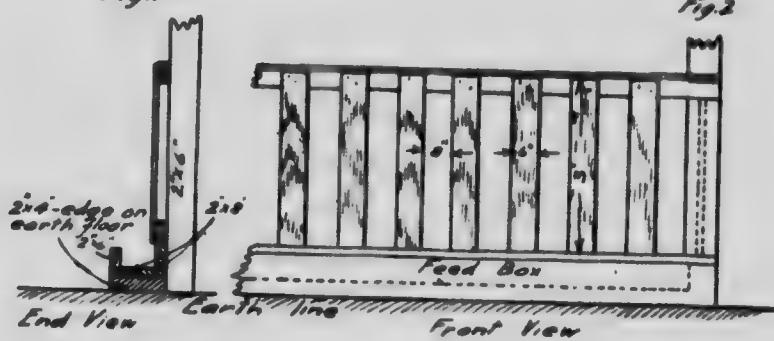
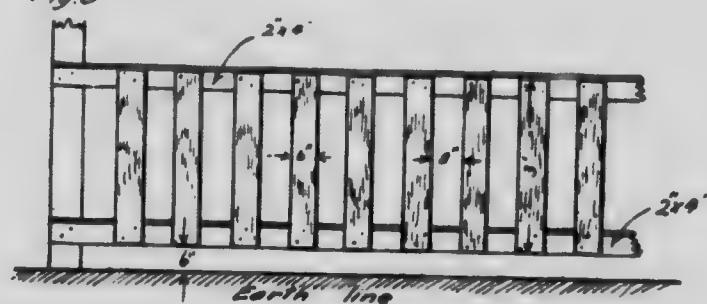


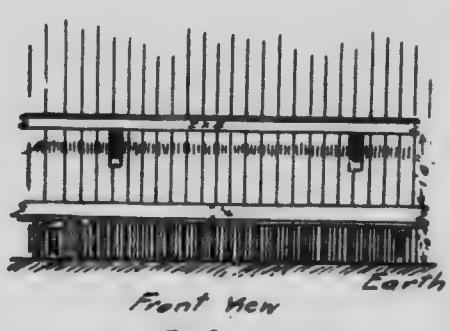
Fig. 2

Fig. 3

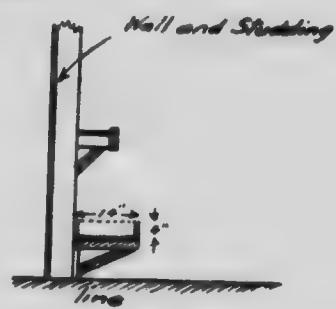
Rock.



Grain trough



Front View  
Fig. 4



End View  
Fig. 5.

The shed should have a comfortable yard around it, surrounded in turn by a tight fence which if possible should have a straw stack within it. In order to keep the sheep from getting in under the straw and filling their fleeces with chaff, a square up and down face should always be kept on the stack and the residue used for evening feed or bedding. All sheep feed should be fed in the yard on the ground. The cost of a shed as described would be about \$200 without a loft. If a loft is added there should be trap doors on the north side above the rack so that feed may be dropped in. The roof must be close and dry. Forty or fifty head being considered the most profitable number of sheep for the average farm, the foregoing should provide ample accommodation.

*Success of Range Stock.*—As a proof that range ewes will prove profitable upon the small farm in Saskatchewan when properly looked after, the following extracts are quoted from letters written by farmers who purchased range ewes at some one of the annual sales of the Saskatchewan Sheep Breeders' Association.

The first letter runs as follows:

"In October, 1910, I bought fifteen grade ewes at the Saskatchewan Sheep Breeders' Association Sale for \$112 or about \$7.50 apiece. They wintered chiefly on oat straw, which they prefer to hay or other straw. I bred them in November but was not very fortunate with the lambs. I saved twelve and lost four besides one ewe. The twelve lambs all did well, and I sold eight wethers to the butchers in the fall for 17½ cents per pound, dressed weight. I think the reason the ewes had difficulty in lambing was because they were young and did not get enough exercise through the winter. I sold alive the three ewes that lost their lambs to the butcher for \$30. The wool weighing 100 pounds at 10 cents, makes \$10, and I took two first prizes at the fair for best ewe and ewe lamb, which gave me \$6. The eight lambs sold to the butcher brought \$74.40 or \$9.50 apiece. I received in all \$120.40 for mutton, wool and prizes during the year, and still had the original number left for breeding, and four ewe lambs filling the places of the ewe that died and the three sold."

And another from a farmer who purchased in the early fall of 1912, in which he says:

"I must say that so far I am very well pleased indeed that I bought those sheep. The first month I had them I had to stand a lot of criticism from neighbours who considered my purchase as foolishness, but this last while several who were kicking the hardest about sheep have asked me to save them all the ewe lambs I can spare next fall."

#### ANIMAL ENEMIES.

The animal enemies of sheep in the province of Saskatchewan consist of the timber wolf, the prairie wolf or coyote, and the common and supposedly domestic dog.

Of these, the timber wolf is comparatively rare, and in the present cultivated portion of the province is only found in a few localities. Unfortunately the same cannot be said of its smaller relative, the coyote. This animal is one of the worst pests the sheep farmer has to contend with, especially in rough country or in bluffy, semi-wooded sections. Some



Carload (230 head) of lambs out of Western Merino grade ewes from Maple Creek, Sask., and got by pure bred Leicester rams. Sold October 31, 1913 on Winnipeg market at 80c. per cwt. above extreme top of market. Bred by A. J. Mackay, Macdonald, Man.



CHAMPION GRADE SHROPSHIRE WETHER.

farmers who have started into sheep keeping have gone out of the business on account of the depredations of coyotes.

Coyotes are worst at lambing time, and they seem to appear and disappear miraculously. There are numerous ways of getting rid of these pests, of which the best and easiest is the keeping on the farm of a pair of wolf hounds of a good killing strain. It is advisable to have a pair because they will range wider, kill more, and are not so liable to be badly cut up in the process; besides it takes a very game dog to tackle a cornered coyote alone. It is advisable to let a young dog learn the business with an older animal who has proven itself to be a game killer.

Poisoning, by means of strychnine or other toxic materials is a practical measure, but one with which great care must be exercised in order to ensure the safety of other animals. The ordinance governing the setting out of poison in the North-West Territories was repealed in 1897, and since then there has been no measure introduced relative to this. At the present time persons who expose poison in Saskatchewan are liable for any damage that may occur and may be dealt with under the criminal code.

Dr. W. H. Knowles, Montana State Veterinarian has successfully pursued a system of coyote destruction which includes the injection of captured coyotes with the sarcoptic mange of the dog. The coyotes are released and transmit the infection far and wide among their kindred.

*Wolf Bounty.*—As an added incentive to the destruction of wolves, a Wolf Bounty Act was passed in 1907, and revised in 1909 and 1912-13, by which the provincial government pays fifty per cent. of the bounty paid out by any municipality or local improvement district, the amount on which a 50 per cent. refund is made, being limited to one dollar for prairie wolves and five dollars for timber wolves. The payment of bounty was then optional with the municipalities, quite a number of which never paid any at all. By the recent revision of 1912-13, it is compulsory for every municipality to pay bounty and the secretary treasurer of each becomes, *ex officio*, inspector of wolf pelts for animals killed within the boundaries of his municipality and has power to administer any oath or receive any affidavit required to be made or taken under The Wolf Bounty Act. Thus when a wolf is killed within the boundaries of a certain municipality it is necessary for the slayer to take the pelt to the secretary of that municipality, who marks the pelt and pays the bounty. The statutory bounty under the 1913 revision is one dollar for a prairie wolf and ten dollars for a timber wolf. Under this Act a refund of \$4,843 was made in 1912, representing the destruction of 206 timber wolves and 7,626 coyotes and coyote pups.

The stray or wandering dog is also a most dangerous enemy, and in this connection wolf hounds are perhaps as bad as any. The hounds will seldom or never bother sheep if they are accustomed to them, and it is generally some strange or passing animal that does the damage. The writer has lived on a farm in Saskatchewan where from one hundred to five hundred head of sheep were kept at various seasons, and on which was also kept a fine pair of wolf hounds who never attempted to injure the sheep in any way though passing and repassing near them on many occasions.

The damage done by a worrying dog, especially in a flock of pregnant ewes, is incalculable, and for this reason the law in this regard in the

Province of Saskatchewan is especially severe. It is herewith given in full:

**"AN ACT FOR THE PROTECTION OF SHEEP AND OTHER ANIMALS FROM DOGS.**

"1. Any person may kill any dog in the act of pursuing, worrying or destroying cattle, horses, sheep, pigs or poultry elsewhere than on the inclosed land occupied by the owner of such dog. C.O. 1898, c. 82, s. 1.

"2. On complaint made on oath before a justice of the peace that any person owns or has in his possession a dog which has within three months previous worried, injured or destroyed any cattle, horses, sheep, pigs or poultry outside of the inclosed land occupied by the owner of such dog, such justice of the peace may issue his summons directed to such person stating shortly the matter of such complaint and requiring such person to appear before him at a certain time and place therein stated to answer to such complaint; and upon conviction on the evidence of credible witness other than the complainant of having such dog in his possession, the justice of the peace may make an order for the killing of such dog within three days, and in default thereof may in his discretion impose a fine upon such person not exceeding \$20 with costs. C.O. 1898, c. 82.

"3. No order or conviction under this Act shall bar any action by the owner or possessor as aforesaid for the recovery of damages in respect of the subject matter for which such conviction is had. C.O. 1898, c. 82, s. 3.

"4. It shall not be necessary for the plaintiff in any action for injuries done by a dog as aforesaid to prove that the defendant was aware of the propensity of the same to pursue and injure animals, nor shall the liability of the owner or possessor as aforesaid of any dog for any injury done by such dog depend upon his previous knowledge of the propensity of the same to injure animals. C.O. 1898, c. 82, s. 4."

Sheep that are near thoroughfares or in any danger of these attacks should always be securely corralled at night in order to avoid this danger. Once dogs start sheep worrying, especially if they taste blood, it is almost always impossible to cure them of it, and they had better be destroyed.

**MARKETING.**

In writing the foregoing chapters the object in view has been to give advice and counsel calculated to stimulate sheepbreeding as a productive industry, and at the same time improve, when possible, the quality of the product. Production is, however, only one end of the business and the economic success of the industry is as dependant upon the observance of sound principles in marketing as upon efficiency in production. The sale of animals, which it has taken months or probably years to produce, is usually effected in a few minutes, and whether the entire undertaking shall prove profitable or otherwise often depends upon the ability of the farmer to sell advantageously. Consequently it is felt that this bulletin would not be complete without some reference to that phase of the subject.

Before passing to a detailed consideration of the subject it might be well to note that the farmer engaged in raising any kind of live stock

has a great advantage over the grain grower, in that he can dispose of his products at various stages in their development if the market conditions at any time are particularly favourable. The sheep breeder can dispose of his surplus lambs in the fall if the prices then offered will net him a good profit, but if the price is only average he can hold them over and dispose of them at any time during the following winter, spring or summer. As long as the animal is growing, its increase in weight will more than compensate for the food and care which it requires, and by marketing it at a time when the prices are in excess of the average, the profits of this business will be materially increased. The grain grower on the other hand cannot dispose of his crop until it has reached maturity, and if he holds it after that time there is no increase either in quality or quantity to compensate for storage. As has been pointed out, however, once a sheep has reached maturity and is in high condition, it can seldom be held to advantage.

*General Principles.*—There are certain general principles which may be said to be fundamental to the successful sale of any kind of live stock on the open market. Briefly stated, stock should be marketed in lots of uniform type, high quality and unit size. When animals have to be transported long distances by rail, as is the case in Saskatchewan, it will be readily recognised that carload lots afford the greatest economy in handling, but it is advisable that the car lot be made up of only one kind of animal. Due to inconveniences which arise at the point of delivery and to the injuries which the smaller animals often receive in transit, a mixed car of cattle, sheep and hogs obtains a much lower price than a straight carload of the one class.

Not only does the carload made up all of the one class of stock command the best price, but the more uniform the animals are as to type, age and quality the greater should be the premium paid. Several car-loads, each made up of spring lambs, yearling wethers and mature ewes of mixed age will not bring in as good returns as those which could be obtained from the same shipment were the animals separated out and each class put in cars by themselves. If carload lots, all possessing the same breed characteristics can be produced so much the better.

Apart from uniformity in type, uniformity of quality should also be considered. Shippers have found in the past that when animals in poor condition are marketed along with others in first class flesh, the price received for the whole consignment will be much lower than the average between the prices quoted for the two classes taking into consideration the number of animals of each class supplied. In fact, where a few poor individuals are included in a shipment of good quality animals, the net price received for the whole shipment is often less than would have been given for the good animals alone. To obtain the highest price, excellence as well as uniformity of quality is essential. Stock in only average condition will never command more than average prices, but during recent years there has been a considerable increase in the wealth of our people, particularly in the larger cities, and a demand is now made for an extra choice product in all lines of the meat trade, so that animals in the pink of condition are in demand and always obtain a considerable premium. The shipper who can supply carload lots, uniform as to type, breed and age, and of high quality, has complied fully with the market requirements and should obtain the maximum return for his stock.

Saskatchewan sheep breeders are assured of a home market for many years to come. The rapid growth of towns and cities throughout the prairie provinces, together with the development of the lumbering and mining areas in British Columbia, promises an ever-increasing market, and at the present time many thousands of carcasses of dressed mutton are imported annually from Australia and New Zealand. There are few districts in Saskatchewan where the local supply of mutton is sufficient to meet local needs throughout the year, so that in the majority of places local butchers will buy all the mutton which can be produced for some time. This, of course, does not apply to the ranching districts.

The farmer is, however, often at a disadvantage in disposing of his live stock. He usually waits until a butcher or stock buyer comes around to his farm and makes him an offer for the animals he has for sale. The buyer is in close touch with the market and knows what prices are being paid in other places. He knows the type of animal which is in demand and is usually a better judge of stock than the farmer. His interest is to secure the animal as cheaply as possible, so that he can make a large profit when he disposes of it either by retail or to some packing firm. The farmer knows that he has to sell the animal; he may feel that the price offered is not sufficient, but he does not know when another buyer may appear, and although he may induce the buyer to raise his offer a little, yet the latter usually secures the animal at a figure which will net him a handsome profit. Frequently travelling buyers are employed by large packing houses, and whilst there are a number of thoroughly experienced and reliable buyers it is to the interest of these parties to keep the prices as low as possible as their travelling expenses must, in the final analysis, come out of the farmers' profits. The farmer who ships his stock and sells through a commission firm is also at a disadvantage, because once his animals have been shipped he cannot afford to bring them back to the farm and consequently must accept whatever price is offered when they are delivered at the central market.

The organisation of co-operative marketing associations, such as are in operation in Minnesota and Wisconsin, or in many European countries, would do much to improve this condition of affairs, particularly in communities where there are a large number of small breeders. A number of breeders club together and employ a manager to look after the marketing of their stock. This does away with the many travelling buyers who now purchase the stock, and whose salaries and expenses are an undue charge upon the farmer. One such sales manager can do the work of several travelling buyers. His expenses are small as the members of the marketing association come to him when they have stock to sell, and he does not have to travel all over the country piling up livery and other expenses in an effort to obtain business. Being paid by a percentage on sales, it is to his interest to be thoroughly acquainted with the market conditions at all times, that he may obtain the highest possible price for the stock. His interests are identical with the producers, and not with the packers, as is the case with travelling buyers, etc.

Co-operative marketing enables the small breeder to obtain all the benefits previously outlined, of shipping in car lots, and if the co-operative movement be extended to include breeding operations, it will, by the co-operative use of high class sires, ensure community breeding, which in turn will bring higher market returns, as the type of animal produced

becomes more uniform and the district acquires a reputation for producing that particular kind of stock.

Co-operative marketing of wool would also be advantageous. At the present time the freight charges on small shipments, *e.g.*, less than car lots, detract greatly from the profits of this branch of the business. Better prices could be obtained if the wool were gathered at some central point, sorted as to grades and forwarded to the manufacturers in car lots. Through a co-operative wool marketing association instruction could be given members regarding the proper methods of handling the fleece, tying, sacking, etc., and uniform arrangements made regarding other details which would tend to increase the profits of the business.